

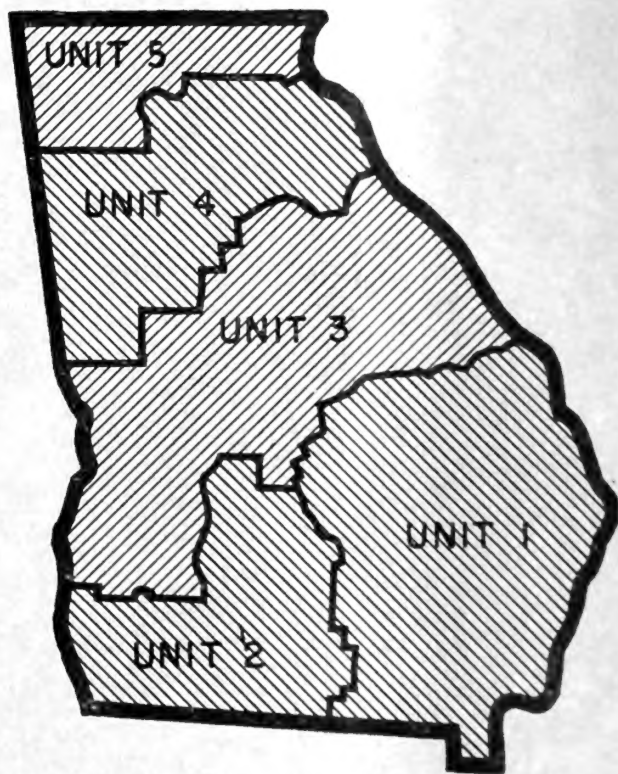
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Georgia

FOREST RESOURCES
and **INDUSTRIES**



FOREST SERVICE

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Georgia Forest Resources and Industries



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SOUTHERN FOREST EXPERIMENT STATION
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Mensurational Analyses in Charge of
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The Forest Survey

DEPENDABLE information on the supply of all raw materials is vital to the conduct of the war and to the success of present efforts at post-war planning. This economic survey of an integral part of the Nation's reservoir of raw material—our forests, and of the industries dependent upon them, is essential to a complete understanding of resource potentialities. The data presented result from the first Nation-wide field inventory ever to be made of the volume, quality, and species of the timber resource, undertaken primarily as an essential contribution to the national, social, and economic welfare in peacetime. The rapidly changing conditions of our economic and social life since the second world war began have accentuated the need for publishing the facts already gathered and the conclusions to be drawn from them.

The Nation-wide Forest Survey, authorized by the McSweeney-McNary Forest Research Act of May 22, 1928, has undertaken the task of obtaining facts essential to a system of planned forest land management and use for each of the States and forest regions, and for the Nation, and through analysis thereof is aiding in the formulation of guiding principles and policies, fundamental to permanent forest land use.

The fivefold purpose of the Forest Survey is: (1) To make a field inventory of the present supply of timber and other forest products; (2) to ascertain the rate at which this supply is being increased through industrial and domestic uses, windfall, fire, disease, and other causes; (4) to determine the present consumption and the probable future trend in requirements for timber and other forest products; and (5) to interpret and correlate these findings with existing and anticipated economic conditions, as an aid in the formulation of both private and public policies for the effective and rational use of land suitable for forest production.

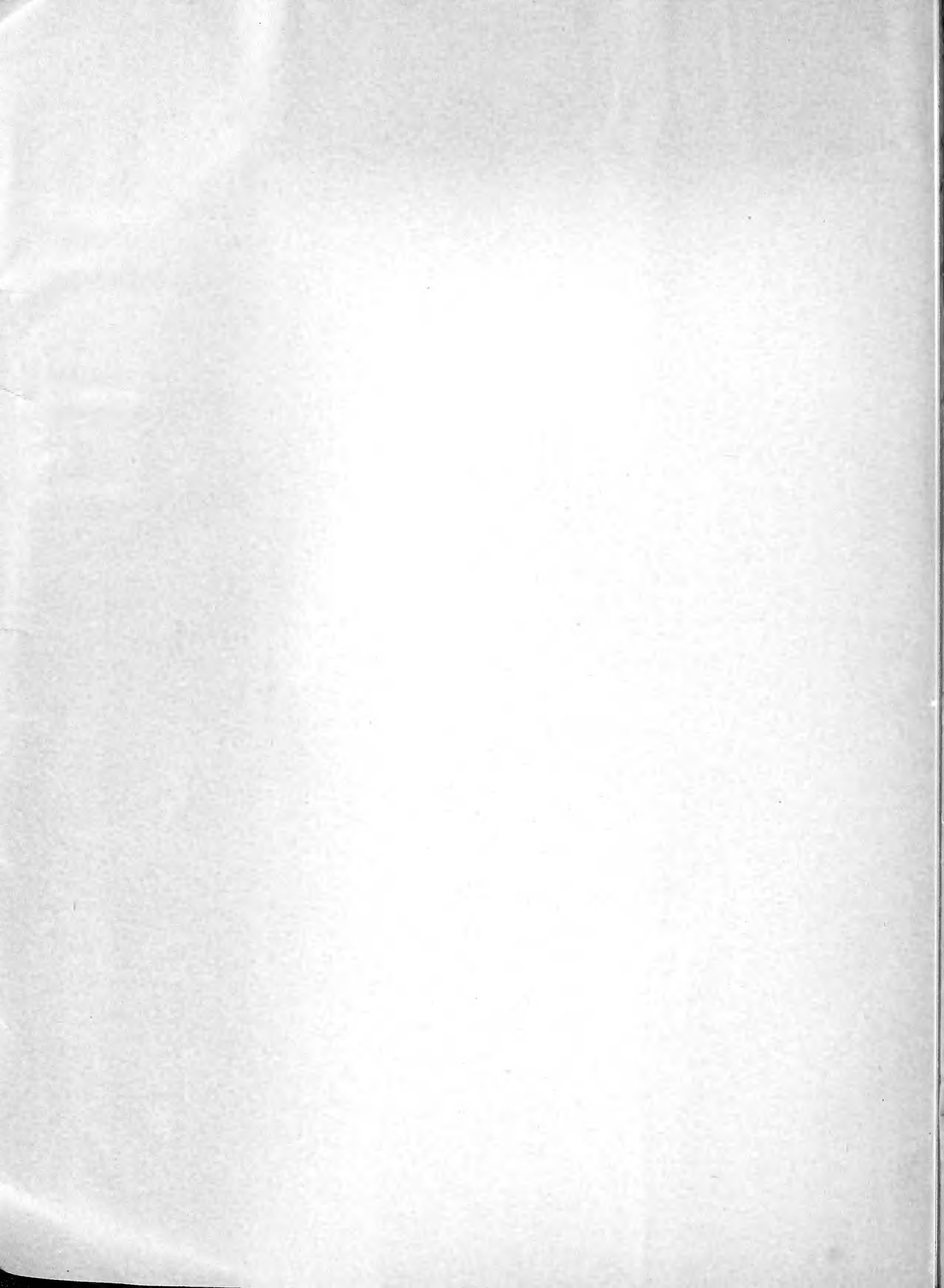
The plan has been to publish the results of this investigation as they become available. Necessarily, the data here presented apply to large areas and should not be interpreted as portraying correctly the forest situation for small sections, the conditions of which may be either better or poorer than the average for the entire unit or State. They supply the general background for the intensive study of critical situations. Recommendations included in these reports are adapted to the long-time character of timber growing and presuppose normal peacetime conditions. Any that are out of line with war requirements are obviously in abeyance for the present.

The survey is conducted in the various forest regions by the forest experiment stations of the Forest Service and in the South by the Southern Forest and Range Experiment Station with headquarters in New Orleans, La.

RAYMOND D. GARVER,
Director, Forest Survey.

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Introduction and Summary of Findings

GEORGIA, one of the original 13 States of the Union, popularly called the "Empire State of the South," is the largest State east of the Mississippi River, its greatest length being 300 miles and its greatest width 250 miles. Approximately three-fifths of its area is forest land. Georgia has a greater volume of saw timber and, with the exception of Florida, more forest land than any other eastern State. From it to the North and Middle West go great quantities of lumber, railroad cross ties, paper, and other forest products, and it is also the source of more than half of the Nation's naval stores. It is obvious that forest resources and industries of such magnitude are of prime importance in any consideration of economic and social conditions of the State.

In the endeavor to ascertain how important such resources are to the people of the State and how they can be made even more valuable, a State-wide field inventory was conducted in Georgia during 1934, 1935, and 1936 by the Forest Survey, employing several crews of three men and a supervisor.¹ Parallel lines 10 miles apart were run approximately east and west across the State. At $\frac{1}{8}$ -mile intervals along each line, quarter-acre sample plots were established. In the southeastern part of the State, because of relative inaccessibility, the Okefenokee Swamp (412,100 acres) and coastal islands (384,200 acres) were not covered in the field survey. On the 26,000 forest plots examined, the field men recorded such items as forest type, forest condition, fire damage, density and distribution of reproduction, and site quality. They tallied the trees by species and diameter class and made increment borings to determine total age of the stand and growth of the timber during the last 10 years. These data, together with some estimates for the areas not covered by the field survey, furnish the basis for the statistics of area, volume, and growth presented in this report.

Information on forest industries and timber-drain figures for 1934, 1935, 1936, and 1937 were obtained from a canvass of the wood-using plants and local wood consumers.

¹ Assistance in the collection of this material was furnished by the personnel of Work Projects Administration official project 65-2-64-74.

Naval stores production is based on a canvass of all the turpentine stills that operated during the 1933-34 cropping season. Volume tables were constructed, and tree grades and cull percentages were compiled as supplemental studies. Present consumption and probable future trends in national requirements for timber and other forest products are being studied on a Nation-wide basis and will be treated in separate reports.

Definitions of technical and unusual terms used in this report are given in the appendix, page 38.

Fifty-seven percent of Georgia's total land area of 37½ million acres is forest. Agriculture is the biggest industry, although the principal cash crop, cotton, has only a fraction of its former annual value. In many parts of the State, erosion has gullied the land and drained its fertility. The survey found over 2 million acres of idle and abandoned agricultural land, most of which probably will revert to forests. Forest land should play an increasingly important part in the economic and social structure of the State.

The Forests

Most of the trees are small. Although the sites usually are good, the stands are less than half stocked owing to overcutting and to the frequent occurrence of forest fires; only 27 percent of the forest area receives the benefits of organized forest-fire protection.

Public ownerships, State and Federal, include about 5 percent of Georgia's forest land; farm woodlands, 55 percent; and nonfarm, privately owned woodlands, 40 percent.

Pine type groups² cover 66 percent of the forest area studied; pine-hardwood type groups, 13 percent; and hardwood and cypress type groups, 21 percent. As the result of decades of cutting, only 2½ million acres of young growth remain. Upon cut-over land and abandoned fields, a natural second growth has reforested 17 million acres, about half of which has already developed.

² For description of forest-type groups, see "Forest Types Used," appendix, p. 39.

log size. Less than 1 million acres is classed as clear-cut, although much of the original stand was removed in this manner.

Recreation and wildlife conservation in the forest are becoming important activities in the State.

Naval Stores

In 1934-35, the years in which the survey was in progress, the annual value of the gum naval stores crop in Georgia, which is the greatest of any State in the Nation, was about \$15,000,000, and the industry provided about 4½ million man-days of employment a year. In all, 635 operators of naval stores stills and approximately 10,000 gum producers without stills worked about 7,000 crops of 10,000 working faces, with an aggregate annual production of about 300,000 units.

The gum naval stores industry is confined to the southern part of the State, where about 8 million acres are classed as turpentine area. On this area, sufficient future tree supplies to maintain the present production of the gum naval stores industry are in sight, provided the cutting of round trees by the pulp and paper, lumber, and other industries is not greatly increased. In 1934 43 percent of the area was in well-developed turpentine stands; 11 percent, in advanced sapling stands; 15 percent, in young sapling stands; and 31 percent, in reproduction, clear-cut, and intermingled nonturpentine areas. The turpentine area included about 195 million turpentine trees at least 7 inches d. b. h.,³ of which 78 million were round, 65 million were working, 28 million were resting, and 24 million were worked-out.

Three wood naval stores plants, using stumps and lightwood to make rosin and other products, in 1937 provided more than a quarter-million man-days of employment. In south Georgia, the Forest Survey found more than 2¼ million acres holding a resource of about 7½ million tons of stumps suitable for blasting.

Volume Estimates

The net volume of saw timber in Georgia, amounting to 46 billion board feet, is the greatest of any State in the South. Pines, with loblolly pine the most important, make up more than 70 percent of this volume; hardwoods and cypress, less than 30 percent. Second-growth sawlog-size stands contain two-thirds of the saw-timber volume.

Most of the saw-timber area, as well as the volume, is in stands averaging at least 2,000 board feet per acre; and practically all the saw-timber stands are accessible for logging. Trees generally considered small by lumber manufacturers include almost half of the saw-timber volume.

³ See "Definition of Terms Used," appendix, p. 39.

As to quality, much of the pine volume is in trees that are limby and rough, owing to the open condition of many of the stands, especially those in old fields.

The total convertible volume in all living trees 5.0 inches d. b. h. and larger, including those of sawlog size, is 250 million cords, of which half is in pines, three-tenths in soft-textured hardwoods, and two-tenths in firm-textured hardwoods. Approximately 56 percent of the volume is in saw-timber trees, 32 percent in sound trees under sawlog size, and 12 percent in cull trees. The average cordwood volume per acre of sound trees (culls omitted) for the entire forest area of the State is slightly more than 10 cords.

Included in the volume estimates are about 65 million pine trees suitable for conversion into poles or piles.

Forest Increment and Drain

In 1937, the gross growth was 3,363.7 million board feet, and the mortality 861.6 million board feet, leaving a net increment of 2,502.1 million board feet, the largest net increment of any Southern State. Practically all the net increment is in second-growth stands, which, though growing rapidly, are producing material of lower quality than that in older, better-stocked stands. The average net increment per acre for all the productive forest land was 119 board feet. The net annual increment for all growing-stock material (i. e., in good trees 5.0 inches d. b. h. and larger) amounted to 643 million cubic feet, or a total of nearly 9 million cords of wood including bark, of which two-thirds was pine, and an average of 0.4 cord per acre.

The wood-using industries of Georgia included in 1937, 1,607 sawmills, 2 pulp mills (one of which started production in 1936 and the other in 1938), 25 veneer mills, 36 cooperage plants, 6 creosoting plants, and 63 other industries (mostly small), including handle plants, excelsior mills, and shingle mills. Due partly to improved markets and partly to the impulsion of defense activities, the number and productive efforts of the wood-using plants in the State increased considerably during 1939 and 1940. Georgia's forest industries (i. e., lumber, pulp and timber-products plants, planing mills, naval stores plants, wood-preserving plants, etc.) are out-ranked in importance only by agriculture and the cotton-goods industry. According to the Census of Manufactures, 1937, the industries related to forest products, excluding pulp and paper, had nearly 37,000 employees, paid \$15,000,000 in wages and salaries, and created products valued at over \$58,000,000.

In 1937 the drain from the forest growing stock amounted to 2½ billion board feet, of which mortality drain accounted for one-third and the commodity drain (i. e., that material cut for industrial and domestic use) was two-thirds. In

million board feet the drain for lumber was 966; for fuel wood, 296; and for all other wood uses combined, 397.

In 1937 the growth of saw timber exceeded the drain by 843 million board feet; or, for all growing-stock material, by 239 million cubic feet (the greatest surplus for any State in the South). This means that this volume of material was added to the growing stock. Because the forests are mainly second growth, a considerable proportion of the annual growth is of rather low quality, suitable rather for cheap lumber, poles, ties, and pulpwood than for high-grade lumber. If left to "fatten" the growing stock, the convertible annual yield would be increased in both volume and value. Nearly all of this surplus growth occurred in the central and northern parts of the State; in the southern part, the volume of growing stock remained practically unchanged.

Adjustments Needed

To develop Georgia's forest wealth to something approaching its real capacity, forest landowners and their tenants must understand and appreciate the principles of good forest management sufficiently well to apply them; while the general public, including the wood-using indus-

tries, must also be shown the value and necessity of these practices.

If good forest management is to be expected of forest owners, they must be assured of a reasonable degree of protection from losses by fire. County-wide fire protection, as encouraged by a recent act of the Georgia Legislature, should be extended to all unprotected parts of the State.

An increase in close and profitable utilization depends upon ready markets, which should be developed and adapted to the low quality of much of the forest material. Selective logging should become the common method of logging; and, wherever possible, stand-improvement cuttings to remove undesirable trees should be made. To transmute increased wood yield into increased income, more industries that will convert the forest raw material into goods ready for the consumer should be encouraged to locate in Georgia.

Once the growing stock is built up by good forest management, the usable annual output of raw material from the forest can be doubled and the forests can be made to play a much greater part than at present in providing local inhabitants with higher living standards and greater security.

Description of Survey Units

SO widely varying are the forest resources and industries in the different parts of Georgia, from the sea-coast at the southeast to the mountains in the north, that the State was divided into districts, called survey units, that coincide roughly with its five commonly recognized subregions (fig. 1 and table 1). The general description of each necessarily will be brief; readers who are interested in more detailed information are referred to the appendix tables of this report, to Forest Survey releases Nos. 41, 44, and 45, of the Southern Forest Experiment Station, and to United States Department of Agriculture Miscellaneous Publication No. 390, "Forest Resources of South Georgia."

Southeast Unit

Southeast Georgia comprises 35 counties and includes all of the Atlantic coast line and the cities of Savannah, Waycross, and Brunswick. Nearly three-fourths of the land is forested. This and the southwest unit produce more than half of the Nation's gum naval stores.

TABLE 1.—Total area and forest-land area in the 5 survey units, Georgia¹

Unit and year of survey	Total area ²		Forest-land area ³	
	Million acres	Million acres	Percent	
Southeast (1934).....	10.5	7.4	71	
Southwest (1934).....	5.6	3.0	54	
Central (1936).....	10.9	5.6	51	
North-central (1936).....	6.3	2.6	40	
North (1936).....	4.3	2.8	66	
State total	37.6	21.4	57	

¹ Detailed figures given in table 29, appendix.

² The total land area of Georgia was recomputed and reported in the census of 1940 as being 37,451,520 acres, or 132,480 acres less than the older census area used as a basis for calculation in this report. It is impractical to adjust the many tables and calculations based on area to the new figures.

³ Forest-land-area estimates refer to January 1, year of survey.

⁴ Includes 796,300 acres of land not surveyed of which it is estimated that 387,300 acres are forest land.

This unit lies entirely within the Coastal Plain, the topography varying from the low, flat lands of the eastern part of the unit, including the Coastal Islands and the Okefenokee Swamp, to the rolling uplands of the western part, where elevations above sea level reach 400 feet. The climate is mild, almost semitropical; the mean annual temperature is around 67° F., and the growing season is about 8 months. Although the annual rainfall

is some 50 inches a year, severe and protracted drought resulting in serious fire conditions, can be expected at least once in every 2 or 3 decades. About 1 out of every 5 years may have a dry period of several months with a high fire hazard. Windstorms severe enough to cause widespread damage to timber are infrequent in the interior, but they occasionally occur along the coast.

Approximately 60 percent of the land surface is made up of well-drained sandy and sandy-loam soils, on which most of the farms are located. The poorly drained sandy soils of the lowlands, making up approximately 40 percent of the area, are not generally worked for agriculture but are well adapted to the growth of timber, particularly longleaf and slash pines.

Southwest Unit

Southwest Georgia, with its 22 counties, extends from Unit 1 westward to the Alabama line, and from the Florida line to the northern edge of the main body of the longleaf-slash pine type. Valdosta and Thomasville are the largest cities. More than half of the area is classed as forest land.

This unit is also entirely within the Coastal Plain and, with the exception of the southeast part, which is low and flat, is gently rolling, with elevations up to 450 feet above sea level. The climate is similar to that of southeast Georgia, but there is a greater proportion of good agricultural land; one of the best farming sections in the State is located in the southernmost tier of counties.

Central Unit

Extending southwesterly across the State in a belt about 80 miles wide, this subregion covers 49 counties, with Augusta, Macon, Columbus, and Albany as the principal cities. Slightly more than half of the area is forest land. The average annual rainfall is between 40 and 50 inches, and the growing season is 7 or 8 months.

The Fall Line (i. e., the ancient shoreline of the ocean) separates this unit into two distinct parts. The northern half, in the lower piedmont, with elevations reaching 900 feet, is hilly. The southern half, in the upper Coastal Plain, with elevations seldom exceeding 500 feet, is gently rolling. North of the Fall Line, where the soils are generally clay- or sandy-clay loams, erosion has been

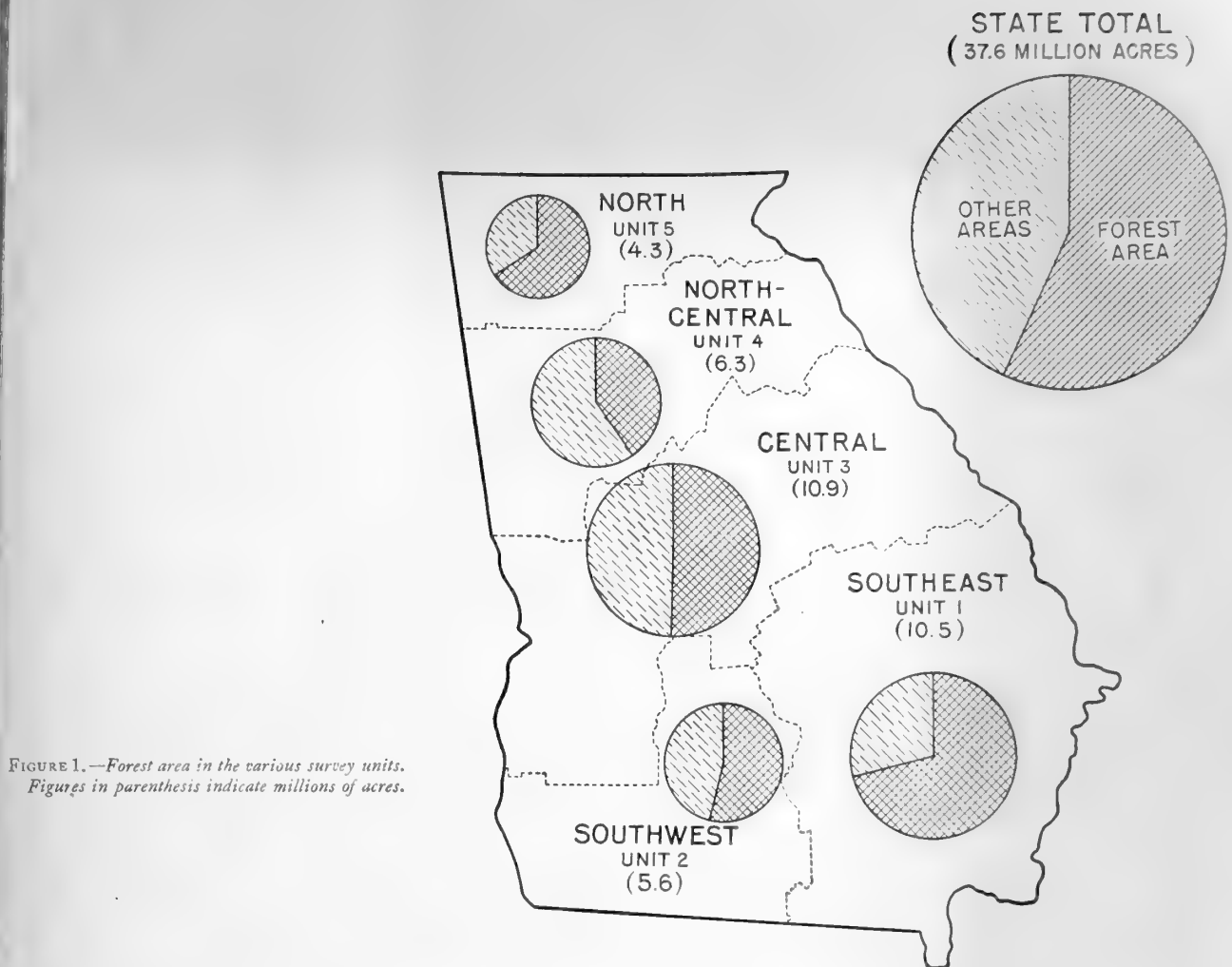


FIGURE 1.—Forest area in the various survey units. Figures in parenthesis indicate millions of acres.

active for such a long time that little of the original surface is left except in bottom lands or forested areas. South of this line, the soils are sandy- or fine-sandy loams, often with red-clay subsoils; some of these soils are classed as highly productive, but most of them are so light that they are easily eroded when cultivated.

North-Central Unit

North-central Georgia, including 32 counties, is chiefly taken up by farms. Atlanta, the capital and largest city of the State, is located in the northern part. Two-fifths of the total area is forest land.

This unit includes parts of both the lower and upper piedmont, elevations ranging from less than 600 feet above sea level to more than 1,300 feet. The rainfall is about 50 inches per annum, and the growing season 7 to 7½ months. The clay-loam and sandy-loam soils of this area, after long use for tilled crops, are often badly eroded, especially upon the steeper slopes not protected by forests.

North Unit

North Georgia takes in 21 counties, 9 of which are along the northern boundary of the State. Rome is the largest city in the unit. Nearly two-thirds of the area is forest land.

An area of broken and diversified topography, north Georgia includes parts of the upper piedmont, the valley and ridge belt, the Cumberland Plateau, and the Blue Ridge Mountains (with the highest point in the State, Brasstown Bald, more than 4,700 feet above sea level). Rainfall ranges from about 50 to 60 inches a year, depending largely upon elevation; and the growing season, which also is affected by altitude, ranges from 5½ to 7 months. A wide variety of soils is present, including those from granitic micaceous, and limestone substrata. About two-thirds of the unit has slopes with more than 10 percent, much of the land of which it erodes seriously when cleared for cultivation.

Social and Economic Situation

Population

ACCORDING to the census of 1940, Georgia had a total population of 3,124,000 people of whom 44 per cent were classed as "rural farm," 22 percent as "rural nonfarm," and 34 percent as "urban" (i. e., residing in cities or other incorporated places having 2,500 inhabitants or more). Approximately 65 percent of the population is white and 35 percent colored. From 1920 to 1940 the Nation's population increased 25 percent, while Georgia's increased only 8 percent. Approximately three-fifths of the counties lost population during these two decades, with the agricultural counties in central Georgia the heaviest losers.

In 1940, of an estimated 1,170,000 employed workers over 14 years of age in the State, nearly two-fifths were in agriculture. The 1937 Census of Manufactures lists 70,000 workers in cotton-goods industries and 37,000 in forest-products industries, many of the latter being part-time farmers. The Census of Agriculture reports that in 1939 farmers worked for pay away from their own farms 6 million man-days, many of them in forest industries.

To preserve Georgia's greatest resource—its people—opportunities for gainful employment must be found. According to the Special Census of Unemployment, taken in the fall of 1937, 255,000 employable Georgians, or nearly a quarter of all gainful workers, were totally or partially unemployed and wanting work.

Land Use

Although no more than an average of 39 of every 100 acres in the State are farm lands (table 2), from the standpoint of number of workers employed and value of the product, farming is by far the most important land use.

According to the Census of Agriculture, in 1934 the cropland area harvested was 8,650,000 acres. For the most important crops the acreage was:

	Acres
Corn (for grain).....	4,360,000
Cotton.....	2,160,000
All hay and sorghum (for forage).....	930,000
Tobacco.....	50,000
Potatoes (Irish, sweet, and yams).....	140,000

The 38 million bushels of corn harvested had a farm value of \$32,000,000. Yields per acre of corn are very light—about 9 bushels—as compared with 19 for the United States as a whole. Cotton, the principal cash crop, had a value of \$61,000,000 (not including the seed); the production, amounting to 971,000 bales, was at the rate of 0.45 bale per acre, as compared with 0.35 for the United States.

Marked and significant changes, however, are taking place in farming. The area of agricultural lands (i. e., the area in farms less farm woodlands) slowly but steadily

TABLE 2.—Land area classified according to land use,¹ 1934–36

Land use	Area	Proportion of total area
Nonforest.		
Cropland:		
In cultivation:	Acres	Percent
Old.....	11,758,900	31.2
New.....	107,800	.3
Out of cultivation:		
Idle.....	1,205,000	3.2
Abandoned.....	974,300	2.6
Improved pasture.....	697,500	1.9
Total farm land.....	14,743,500	39.2
Other nonforest ²	1,408,000	3.8
Total nonforest.....	16,151,500	43.0
Forest.....	³ 21,432,500	57.0
Total all uses.....	⁴ 37,584,000	100.0

¹ See definitions of terms, p. 39. For detailed areas by survey units, see table 29, appendix.

² Includes roads, railroads, towns, villages, marshes, etc., and 409,000 acres in the unsurveyed areas.

³ Includes 387,300 acres of forest not covered by the field survey and 9,700 acres of nonproductive forest land.

⁴ The total land area of Georgia was recomputed and reported in the census of 1940 as being 37,451,520 acres, or 132,480 acres less than the older census area used as a basis for calculation in this report. It is impractical to adjust the many tables and calculations based on area to the new figures.

increased from 1880 to 1920; but from 1920 to 1935 the acreage decreased 9 percent. In many counties of the lower piedmont (central and north-central Georgia) there has been a steady decrease in acreage of farming land ever since 1880. In 1909 the total area of major crops harvested was 9.7 million acres, of which cotton occupied 4.9 million acres, or 50 percent of the total; in 1934, cotton made up only 25 percent of the area of cropland harvested. From 1909 to 1934 corn acreage increased about 1 million acres and all hay and sorghum for forage, about 0.7 million; but the aggregate area for all crops harvested in 1934 was 8.6 million acres, or more than 1 million acres under that in 1909.

Ever since pioneer days, cotton has been Georgia's principal cash crop. As shown by figure 2, from 1908 through the period of the World War about 5 million acres of cotton was harvested each year. By 1924, however, the acreage had dwindled to 3 million, and in 1938 only 2 million was used for cotton. Since about 130 man-hours are required to grow and harvest an acre of cotton in this section, a shrinkage in cotton area of 3 million acres involves a loss of about 39 million man-days of 10-hours each. If we assume that cotton farmers work 200 man-days a year on the average, this shrinkage has resulted in throwing about 200,000 of them out of employment. Counting their families, the welfare of about a million people is directly affected, not to mention the truck drivers, train crews, longshoremen, merchants, bankers, and others whose incomes depend indirectly upon cotton. During the war, the value of Georgia's cotton to the farmer (seed not included) reached an all-time high of \$312,000,000 a year. This prosperity,

unfortunately, was brief; from 1920 to 1930 the farmers received an average of only \$100,000,000 a year for their cotton. In 1932, the value of the crop fell to \$30,000,000, which was less than one-tenth of its peak value; and in 1938, even with Government aid in pegging the price, it was only about \$37,000,000.

The Forest Survey figure of more than 2 million acres of idle or abandoned cropland, as recorded in table 3, includes

TABLE 3.—Idle or abandoned cropland in Georgia, by survey units, 1934-36

Survey unit	Total crop- land	Abandoned or idle	
	<i>Acres</i>	<i>Acres</i>	<i>Percent</i>
South (combined)	4,754,700	562,700	12
Central	5,042,400	797,100	16
North-central	3,598,300	578,700	16
North	1,348,100	240,800	18
State total	14,743,500	2,179,300	15

only the cropland area abandoned shortly before the time of the survey. It does not include the vast acreages of land abandoned in past decades but now covered with old-field forest stands. Central Georgia has the largest area in cropland and naturally has suffered the greatest losses in the cotton collapse and has the largest idle acreage, but the north unit, with the smallest area, has the greatest percent of idle land. Most of this abandoned cropland will revert to forests, unless the prices of cotton and corn increase materially.

Erosion

Soil erosion in some form and to some degree occurs quite generally throughout the State. Active erosion in

FIGURE 2.—Georgia's annual cotton crop.

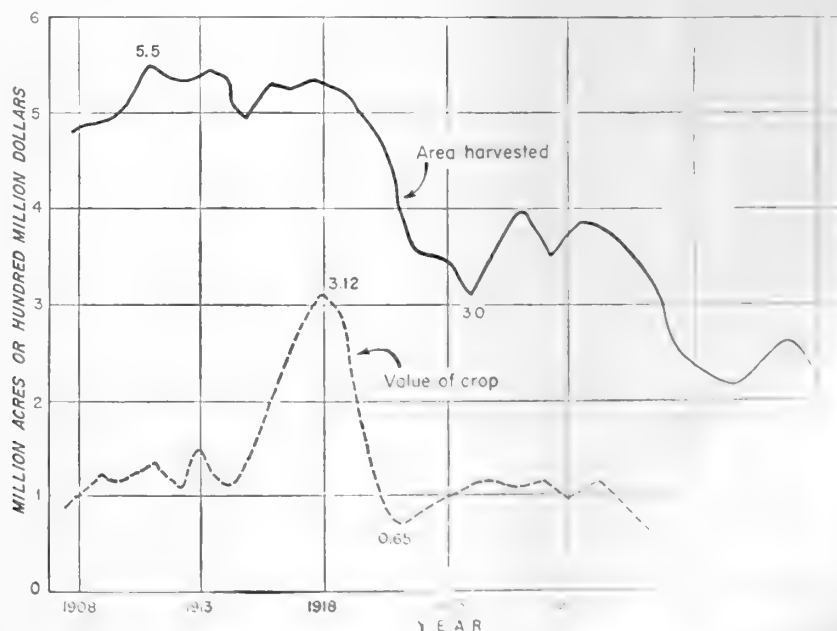


TABLE 4.—*Correlation of land use with type of erosion, in central, north-central and north Georgia, 1936*¹

Land use	No or arrested erosion	Sheet erosion	Shoestring erosion	Gullied land	Total area eroding	
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Percent</i>
Forest.....	9,753,800	337,800	395,700	478,000	1,211,500	11.0
Cropland:						
In cultivation.....	6,006,600	1,258,700	433,300	58,700	1,750,700	22.6
Idle and abandoned.....	1,008,800	299,200	202,600	106,000	607,800	37.6
Pasture.....	490,500	58,000	40,600	25,800	124,400	20.2
	17,259,700	1,953,700	1,072,200	668,500	3,694,400	17.6
Forest, cropland, and pasture.....	Percent	Percent	Percent	Percent	Percent	Percent
	82.4	9.3	5.1	3.2	100.0	

¹ For detailed figures by survey units, see table 30, appendix.

well-marked, advanced, and destructive stages was found to be present on 12 percent of the total forest, cropland, and pasture land surface in the State. As indicated on the soil surface of the many thousands of $\frac{1}{4}$ -acre plots sampled, the following types of erosion are recorded: (1) Sheet erosion, where the soil is washing off from a generally smooth surface; (2) shoestring erosion, where the soil surface is cut into, and a system of small, branching gullies a few inches to not over 2 feet deep is formed; and (3) gully erosion, where the soil surface is being destroyed by deep gully systems.

As shown in table 4, compiled for the three northern units that contain most of Georgia's eroded land, marked erosion is greatest in extent on idle and abandoned cropland, less on cultivated land and pasture, and least of all on forest land. It should be pointed out also that in many of the places where active erosion is occurring in the forest runoff is heavy from fields above, or the forest has grown up on a severely eroded area on which it has not yet checked the washing away of the soil. Once erosion has become serious, it usually continues after cultivation is abandoned until grass, weeds, or trees are well established either through natural processes or with the assistance of artificial runoff controls such as terraces and check dams.

Unchecked erosion of cultivated lands has in the course of Georgia's agricultural history depleted and even destroyed some of its finest farm lands and is now one of the most significant single factors in bringing about the decline of agriculture in the State.

Forest Fires

The prevalence of the old pioneer habit of indiscriminately burning the woods is directly responsible for the poorly stocked condition of most of the forest stands. According to visible evidence found by the Survey in 1934-36, fires have occurred at irregular intervals in recent years on 77 percent of the forest area. Approximately half the forest sample plots that show fire damage occur in south Georgia, where cattlemen and turpentine

operators used fire extensively to further their objectives, the former to improve grazing conditions, the latter to protect their turpentine orchards from uncontrolled fires. For all the Georgia units combined, evidence of past fires was found on 91 percent of the slash and longleaf pine types, on 77 percent of the loblolly-shortleaf pine-hardwoods types, and on 55 percent of the hardwood types.

The common fire is a surface one that advances slowly, killing the seedlings and some of the young second growth. With the exception of long-leaf pine, which once established is resistant to fire damage, the seedlings and sprouts of all species are subject to heavy losses from forest fires. In uncontrolled or indiscriminate burning, even some of the big trees are killed where ground fuel is heavy or the weather is dry or windy. Fires, directly or indirectly, cause about 75 percent of the mortality in pine timber.⁴ In addition, a large proportion of the damage in standing timber of all species is due to fire and the resulting decay.

According to statistics furnished by the Regional Forester at Atlanta,⁵ about 3 $\frac{3}{4}$ million acres, or 18 percent of the total forest land of Georgia, was burned over in 1937, causing a loss estimated at nearly \$4,000,000. With the exception of Florida and Mississippi, Georgia probably had a greater area of burned-over forest land than any other State in the Nation. About 98 percent of the burning occurred on forest areas not included in organized fire-protection projects.

Excellent results in fire-protection work should be credited to the Georgia Forest Service, to the United States Forest Service, and to the landowners who cooperate in this work; but unfortunately in 1939 only 27 percent of Georgia's forest area received the benefits of such cooperative forest-fire protection; the remainder either suffered from uncontrolled fires or were protected inadequately by the private landowners (fig. 3).

⁴ GEORGIA DIVISION OF FORESTRY AND U. S. FOREST SERVICE. FOREST RESOURCES OF GEORGIA. 32 pp., illus. Jan. 1939. [Processed.]

⁵ GEORGIA STATE PLANNING BOARD. FOREST PLANNING. 96 pp., illus. [Processed.]

Percent of the forest land under cooperative protection in the different survey units is as follows:

	Percent
Combined south units (10.5 million acres).....	35
Central unit (5.6 million acres)	10
North-central unit (2.5 million acres).....	5
North unit (2.8 million acres).....	49
Total (21.4 million acres)	27

In south Georgia, where timber-protective organizations have been developed, cooperative forest-fire protection has been given to a larger area than in any other part of the State, but still almost two-thirds of the forest lands there are not so protected. In north Georgia, owing largely to the presence of a national forest that includes 21 percent of the forest land, nearly half of the total forest area has organized forest-fire protection.

In central and north-central Georgia, cooperative fire protection is in its early stage of development; in neither

of these important areas does it cover more than 10 percent of the forest. The State forest service and extension agencies are working to improve this situation, but the large number of small holdings makes it a difficult task. In central Georgia alone, for example, there were 64,000 farms in 1935, and the dissemination of forest-fire protection and other forestry principles among the majority of these landowners will require time and the concentrated efforts of all forestry agencies.

Increased public aid, both State and Federal, is required to improve materially the fire-protection situation, but very encouraging is the recent adoption of a State constitutional amendment authorizing counties to appropriate money for this purpose. In 1939, 12 counties were using this means of raising funds to be employed in matching the State funds, and it is believed that additional counties are ready to start this work as soon as the State has funds for its share.

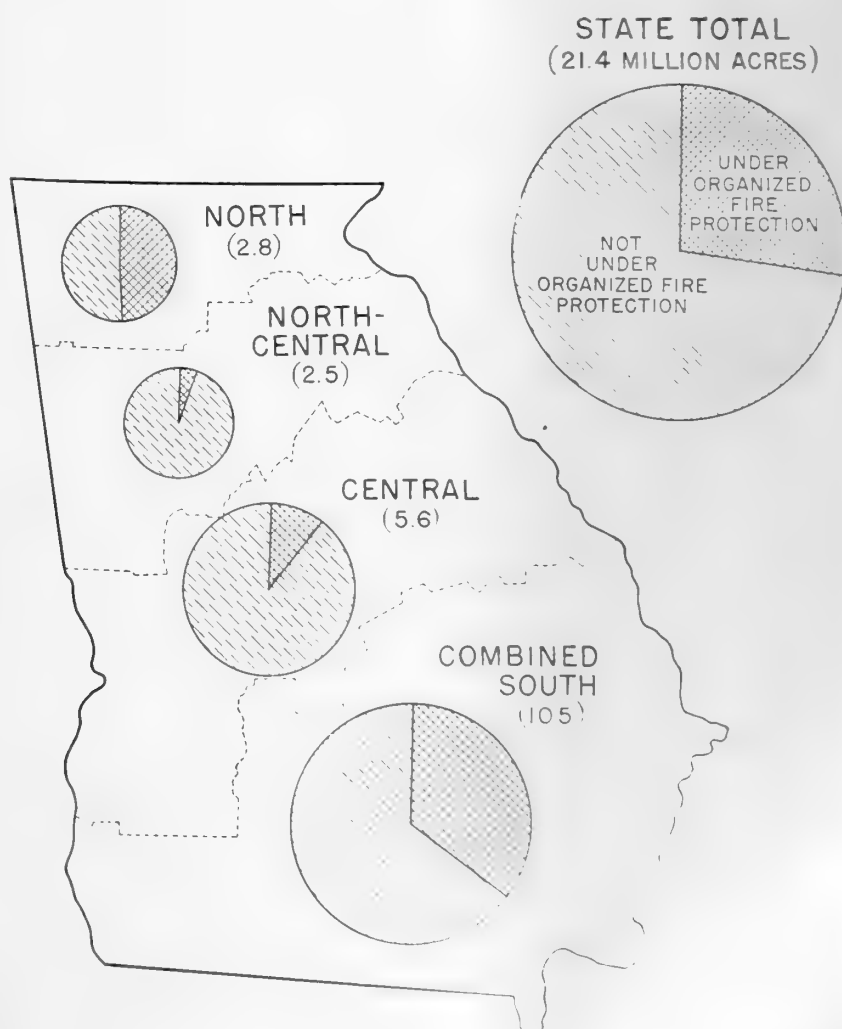


FIGURE 3.—Cooperative forest-fire protection in these several survey units, 1939. Figures in parenthesis indicate millions of acres. Data furnished by the Georgia State Forester.

Land Ownership

In 1935 more than two-thirds of the land in the State was in farms. The average size, including farm woodland, of Georgia's 250,000 farms was 101 acres, as compared with 155 acres in Iowa and in the Nation. According to the 1935 Census of Agriculture, although the small farms of less than 100 acres made up 69 percent of all the farms, the remaining 31 percent included more than 70 percent of the total farm area (table 5).

TABLE 5.—*Number and acreage of farms according to size, 1935*

Size (acres)	Farms		Area	
	Number	Percent	Acres	Percent
Less than 50.....	101,330	40.5	2,723,126	10.8
50 to 99.....	71,143	28.4	4,788,358	18.9
100 to 499.....	73,154	29.2	12,885,872	50.9
500 to 999.....	3,587	1.4	2,352,294	9.3
1,000 and more.....	1,330	.5	2,546,872	10.1
Total.....	250,544	100.0	25,296,522	100.0

For all rural land in farm and nonfarm ownership combined, a supplemental study made in 1934 by the Forest Service in nine representative south Georgia counties revealed only 8 percent of the owners with tracts of 500 acres and larger but holding 62 percent of the total area. In 24 counties of the lower piedmont of central and north-central Georgia, Hartman and Wooten⁶ found that, of the land listed on the tax digests, only 7 percent of the owner-ships were 500 acres and larger, but that these few large holdings included 38 percent of the total area.

In Georgia, 66 percent of the farms were operated by tenants in 1935—except for Mississippi, the highest percent of tenancy in the Nation. According to the report⁷ of February 1937 of the President's Committee on Farm Tenancy,

The percentage of farms operated by tenants is highest in the areas where the major staple cash crops are grown, and the lowest in the areas where livestock, specialized fruit and vegetable production, and subsistence farming are important.

As of August 1934, there was in tax default for 3 or more years a total of 4½ million acres, urban property not included, or 12 percent of the gross land area of the State, the areas of greatest chronic delinquency being chiefly in

south Georgia. Since these data are now old, they are valuable only as an indication what can happen during periods of economic stress, but the State as a whole has suffered for many years in various degrees from nonpayment, or at least slow payment, of land taxes.

Transportation

The principal rivers—the Savannah, forming the eastern boundary of the State; the Chattahoochee, forming the western; and the Altamaha in the interior—were great thoroughfares of transportation as far north as the Fall Line (the heads of navigation are near Augusta, Columbus, and Macon respectively) until 1870, when the railroads put many of the river boats out of business; in recent years river traffic has been light. In addition to these three rivers there are several lesser streams—the Alapaha, Withlacoochee, Ogeechee, Satilla, and Flint Rivers, the last three being suitable for barges and rafts in their lower reaches. Many railroads with well-developed facilities serve the State. Also, a well-planned system of paved and gravel highways and of graded country roads makes practically all parts of the State accessible. Only in the Okefenokee Swamp and in the Blue Ridge Mountains are there sizeable areas lacking transportation.

Power

According to the Federal Power Commission, in 1937 there were about 65 power plants in Georgia, each having a capacity of 100 kilowatts or more; their total capacity was almost half a million kilowatts and their output for the year approximately 1¼ billion kilowatt hours. Water-power plants, of which there were about 30 (included in the above) had a total capacity of approximately 320,000 kilowatts and the output for the year aggregated about 1¼ billion kilowatt-hours. In addition, according to the Army Corps of Engineers,⁸ there are more than 60 potential water-power sites in Georgia not yet developed. Also the northern part of the State is within the region served by the Tennessee Valley Authority. Although lacking rich coal deposits, Georgia is advantageously located in respect to low-cost transportation of coal from the great coal fields in Alabama and Tennessee.

⁶ HARTMAN, W. A., AND H. H. WOOTEN. GEORGIA LAND USE PROBLEMS. GEORGIA AGR. EXPT. STA. BUL. 191. 195 pp., illus. 1935.

⁷ U. S. NATIONAL RESOURCES COMMITTEE. REPORT OF THE PRESIDENT'S COMMITTEE ON FARM TENANCY. 73+6 pp. 1937. [Processed.]

⁸ U. S. CORPS OF ENGINEERS. POTENTIAL WATER POWER SITES, AS SUMMARIZED FROM REPORTS BY THE CORPS OF ENGINEERS TO THE CONGRESS. 23 maps. [1935.]

The Forests

At least 30 different forest types or tree associations are represented in the forests of the State; but for simplicity's sake these are shown and discussed in 5 principal type groups: (1) the longleaf-slash pine type group, confined almost entirely to south Georgia; (2) the loblolly-shortleaf pine type group; (3) the loblolly-shortleaf pine-hardwood type group, occurring in practically all parts of the State, but least extensively in the south; (4) the upland hardwood type group, most common in north Georgia; and (5) the bottom-land hardwood type group (including cypress), most common in the southern part but found throughout the State. The prevalence of certain characteristic forest types over large areas is shown on the map at the back of this publication; within these outlines are many small intermingled areas of other types as well as of cleared land. Relative prevalence of the main commercial tree species in the various type groups, on the basis of cubic-foot volume, is indicated in table 6.

Forest Conditions

The forests of the State vary all the way from old-growth stands, through the various stages of second growth to clear-cut and denuded forest lands. Much of the original forest was cleared to make way for cotton and other crops in the early nineteenth century, and the greater part of the remainder has been cut over for lumber at least once and in some sections several times. Old-growth stands, most of which occur as small scattered tracts of slash and longleaf pines or bottom-land hardwoods in south Georgia, occupied at the time of the survey only 2.6 million acres, or 12 percent of the total forest area of the State (table 7 and fig. 4). They are relatively well timbered; the uncut stands have an average volume of 6,900 board feet per acre; the partly cut, 3,900.

Much of the land that once was tilled and then abandoned, and most of the old logged-over areas totaling more than four-fifths of the forest area (table 8), have restocked or were left with a residual stand of second growth. These stands occupy 17.7 million acres in all sections of the State and in all forest types. On the 42 percent of the forest area where they have reached saw-log size, the uncut stands have an average volume of

TABLE 6. *Species composition of the various forest type groups in percent of cubic-foot volume¹*

Species	Longleaf and slash pine group	Loblolly and shortleaf pine and other pine group	Hardwood group	Cypress group	Various groups
	Percent	Percent	Percent	Percent	Percent
Slash pine	48.2	3.8	9.8	2.3	28.0
Longleaf pine	28.2	1.7	3		16.2
Loblolly pine	3.7	52.3	1.4	6	15.1
Other pines and "cedar"	2.4	13.2	.5	7	4.2
American sweetgum ("red gum")		6	5.9	15.9	4.9
Black and water tupelos	7.3	7.2	21.7	19.3	13.4
Other soft-textured hardwoods	2.9	7.3	18.7	3.6	6.6
Red oaks8	5.8	11.5	1.4	4.6
White oaks	3	1.8	4.0	9	1.7
Scrub oaks	6	8	1.3		6
Other firm-textured hardwoods	1	1.5	7.9	3.2	2.6
Special-use species		2	3		1
Cypress	1.0	.7	2.7	17.7	5
Total all species	100.0	100.0	100.0	100	100.0

CENTRAL, NORTH-CENTRAL, AND NORTH GEORGIA UNITS

Species	Loblolly and shortleaf pine group	Loblolly and shortleaf pine and hardwood group	Upland hardwood group	Bottom-land hardwood group	Various groups
	Percent	Percent	Percent	Percent	Percent
Loblolly pine	49.0	24.3	2.7	8	
Shortleaf pine	33.0	19.4	3.4		
Virginia, other pines, "cedar," and hemlock	3.4	4.1	1.3	18	
Longleaf and slash pines	4.4	1.0	.2		2.8
American sweetgum ("red gum")	2.0	7.9	8.2		
Black and water tupelos .....	.8	5.3	3.7	27.6	38.2
Yellow poplar	1.0	7.7	9.4	9.0	4.2
Other soft-textured hardwoods including cucumber tree magnolia .....	.7	3.2	4.3	17.2	3.6
Red oaks	1.9	9.9	27.2	8.1	7.2
White oaks	1.3	7.2	21.1	3.8	5.1
Scrub oaks .....	.9	1.4	2.7	6	1
Hickory	1.0	5.2	11.5	1.1	
Special-use species .....	.2	.7	1.4	9	
Other firm-textured hardwoods including scrub hardwoods, weed trees, and ash .....	.4	2.7	2.0		
Total all species	100.0	100.0	100		

¹ Basic figures do not include volume of cull tops and limbs of hardwoods and cypress, but do include volume of cypress which ordinarily is considered cull. Bark included.

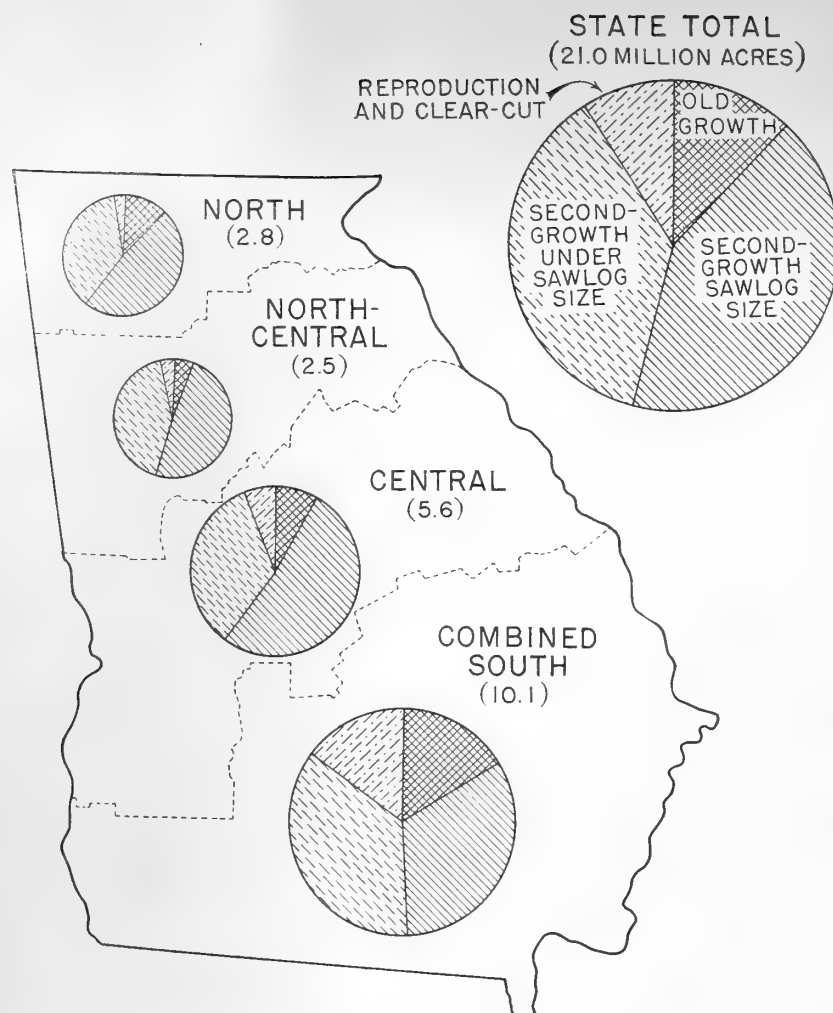


FIGURE 4.—Forest area classified according to condition at time of survey. (South units surveyed in 1934; others in 1936; south units exclusive of area not surveyed.) Figures in parenthesis indicate millions of acres.

TABLE 7.—Distribution of productive forest area in the several survey units, by forest condition

Survey unit	Second growth				Total
	Old growth	Sawlog size	Under-sawlog size	Reproduction and clear-cut	
Combined south.....	1.6	3.4	3.7	1.4	10.1
Central.....	.5	2.9	1.9	.3	5.6
North-central.....	.1	1.2	1.1	.1	2.5
North.....	.4	1.3	1.0	.1	2.8
State total.....	2.6	8.8	7.7	1.9	21.0

3,700 board feet per acre; the partly cut, 2,900, with a minimum of 600 feet. In the remaining second-growth stands, other than reproduction, the average saw-timber

volume per acre is only 300 board feet in scattered trees, but actual wood volume averages nearly 4 cords.

The species pattern of the stands of reproduction, covering 5 percent of the total forest area, is as a rule the same as that of the parent stand, except where fire protection has enabled the more prolific slash and loblolly pines to encroach upon the more fire-resistant but less prolific longleaf.

The small acreage in clear-cut condition, less than 4 percent of the total, will eventually reforest naturally if protected from fire, since much of it has an occasional seed tree or is open to seeding from the neighboring forest. Most of the clear-cut area is in the slash-longleaf pine type of south Georgia (fig. 4), where periodic woods burning has been most prevalent.

Distribution of Tree Sizes

Georgia's forest is primarily a second-growth stand less than 50 years of age. There are eight times as many pines in the 2-inch diameter class as in the 10-inch class and about 20 times as many hardwoods (table 9). Since many of the trees now 2 inches will die as

the stands progress, a high proportion of trees in the smaller classes is essential. Throughout the State and in all forest types, the forest stands are generally understocked. Protection of young growth from fire and other causes of loss will aid materially and promptly in increasing the density of the stocking.

Forest Sites

Based upon the height in feet attained by average dominant trees at 50 years (i. e., the site index), the sites for pine in Georgia (table 10 and fig. 5) compare favorably with those of other States in the pine-hardwood region east of the Mississippi.

In general southwest Georgia was found to have more of the better slash and longleaf pine sites (i. e., with the site index 70 and more) than southeast Georgia. Southwest

TABLE 8.—Productive forest area¹ classified according to forest condition and forest-type group

Forest condition	Slash and longleaf pines	Loblolly, shortleaf, and other pines	Loblolly and shortleaf pines, and hardwoods	Upland hardwoods	Bottom-land hardwoods	All type groups	
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Percent</i>
Old growth:							
Uncut	136,700	156,900	102,600	205,200	388,700	990,100	4.7
Partly cut	713,700	164,700	138,700	159,100	388,500	1,564,700	7.4
Total	850,400	321,600	241,300	364,300	777,200	2,554,800	12.1
Second growth:							
Sawlog size:							
Uncut	2,179,800	2,418,400	655,900	537,900	542,900	6,334,900	30.1
Partly cut	356,700	1,232,100	487,000	216,600	185,100	2,477,500	11.8
Under sawlog size	3,003,900	1,991,000	1,143,100	1,114,500	480,100	7,732,600	36.8
Reproduction	576,600	232,100	173,900	83,500	45,900	1,112,000	5.3
Total	6,117,000	5,873,600	2,459,900	1,952,500	1,254,000	17,657,000	84.0
Clear-cut	749,100	42,500	7,200	6,500	18,400	823,700	3.9
	7,716,500	6,237,700	2,708,400	2,323,300	2,019,600	21,035,500	
All conditions	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>		
	36.7	29.7	12.9	11.0	9.7		100.0

¹ Does not include 299,100 acres uninventoried. Areas are of date of survey, 1934-36. Detailed figures given in tables 31 and 33.

TABLE 9.—Number of sound trees by diameter class and species group¹

Diameter class (inches)	Slash and longleaf pines	Loblolly, shortleaf, and other pines	Hard- woods ²	All species groups	
	<i>Million trees</i>	<i>Million trees</i>	<i>Million trees</i>	<i>Million trees</i>	<i>Percent</i>
2	332	736	1,626	2,694	53.4
4	163	368	452	983	19.5
6	104	203	219	526	10.4
8	92	122	125	339	6.7
10	53	76	80	209	4.1
12	33	48	53	134	2.7
14	17	26	32	75	1.5
16	7	14	19	40	.8
18	3	8	11	22	.4
20 and over	2	8	15	25	.5
Total	806	1,609	2,632	5,047	100.0

¹ Date of survey, 1934-36. Detailed figures by survey units given in table 34, appendix.

² Includes cypress.

TABLE 10.—Pine type areas classified according to site quality

Height at 50 years (feet)	Slash pine types	Longleaf pine types	Loblolly pine types	Shortleaf pine types
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
90 or more	2	1	11	(1)
80	17	8	30	2
70	50	42	48	16
60	30	45	11	53
50 or less	1	4	(1)	29
Total	100	100	100	100

¹ Negligible.

Georgia had the highest proportion of the better loblolly pine stands, and north Georgia the lowest, although loblolly pine grows most extensively in central and north-central Georgia. In the three northern units, where shortleaf pine is widely distributed, the highest proportion of better sites was found in central Georgia, and the lowest in north Georgia.

Stocking

A study made of degree of stocking permits a comparison (fig. 6) of average volume per acre of the various 10-year age classes in certain units and their proportionate distribution by areas in the present forest with potential stocking as indicated in the volumes per acre of the most heavily stocked 10 percent of the uncut stands for the same age classes on weighted-average sites. Volumes are expressed in cubic feet, inside bark, with no deductions for woods cull.

In the slash and longleaf pine types in south Georgia (fig. 6, A), only 38 percent of the area has stands older than 40 years. Volumes per acre for the average stands range from less than 50 cubic feet for the youngest 10-year age class to only a little more than 800 cubic feet for the oldest. In striking contrast, the volume per acre for the well-stocked stands, shown by the dotted line, ranges from about 200 cubic feet at 10 years to 600 at 20 years, 1,700 at 40 years, and 2,200 at 70 years.

In the loblolly-shortleaf pine hardwoods in the north-central portion, also, only 36 percent of the area has stands older than 40 years. Volumes per acre for the average stands range from less than 50 cubic feet for the youngest 10-year age class to only a little more than 800 cubic feet for the oldest. In striking contrast, the volume per acre for the well-stocked stands, shown by the dotted line, ranges from about 200 cubic feet at 10 years to 600 at 20 years, 1,700 at 40 years, and 2,200 at 70 years.

average stands range from 50 cubic feet for the youngest 10-year age class to 1,700 cubic feet for the oldest. In contrast, the much higher volumes per acre of the well-stocked stands amount to 400 cubic feet at 10 years,

2,600 at 40 years, and 3,200 at 70 years. The comparison for north-central Georgia (fig. 6, *B*) is believed to be representative of the three northern survey units.

To ascertain the degree to which present forest stands

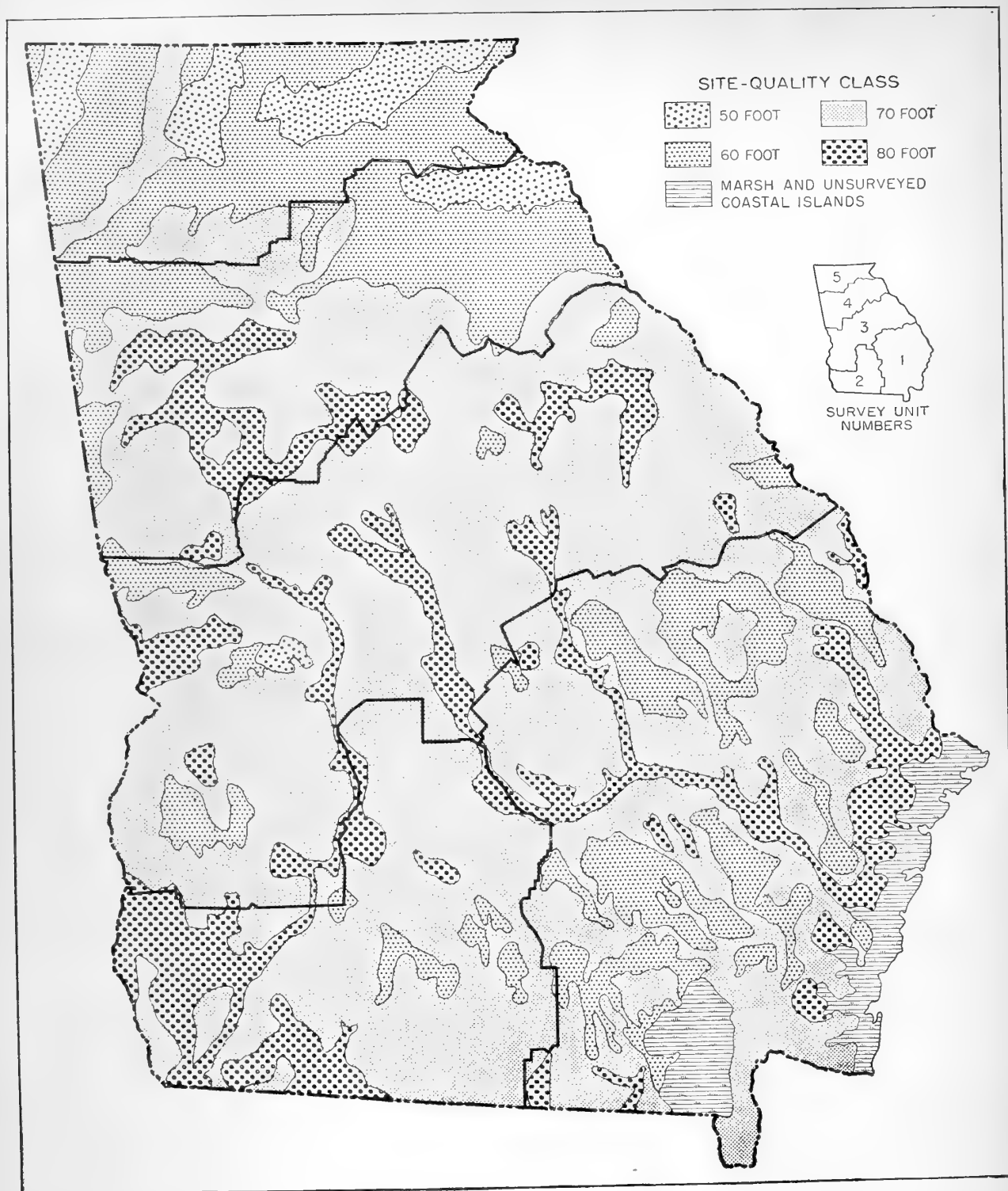


FIGURE 5.—Areas in four site-quality classes, based on the height growth of the predominant pine species.

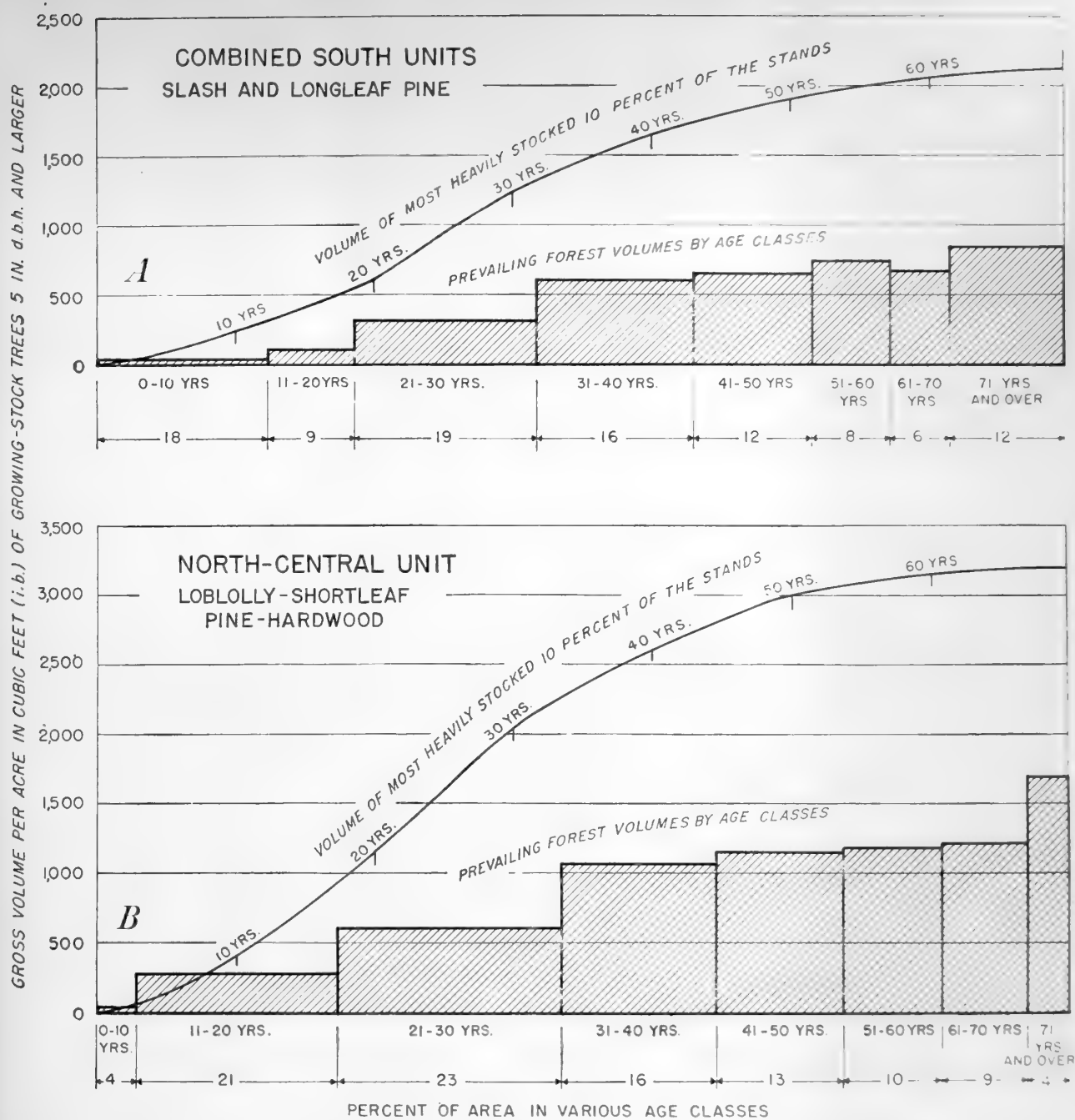


FIGURE 6.—Prevailing volumes, by age classes, compared with those in well-stocked stands: A, Combined south units, slash and longleaf pine; B, north-central unit, loblolly-shortleaf pine-hardwood.

are understocked, an analysis was made of the stocking, by volume, of the stands of loblolly-shortleaf-hardwood type groups in north-central Georgia. Stands at 40 years and older, both uncut and partly cut, were examined. On 30 percent of the area stands were very light and unsatisfactory—less than a fourth of the average well-stocked stand. Fifty percent of the area had one-fourth to three-fourths of a good stand, and only 20 percent

could be considered reasonably satisfactory; that is, having more than 75 percent of desirable stocking.

From this, and because the better stocked stands in general developed without benefit of adequate protection and other good-management practices, it is concluded that the growing stock of the prevailing slash and pine and pine-hardwood type groups should be doubled, but this will require several

fire and the application of much better forest-land management than has prevailed in the past.

Forest-Land Ownership

Georgians, as individuals and corporations, have owned practically all of the forest area of the State since those early days when they first dispossessed the Indians and drove them westward. In 1938, almost 20½ of the 21½ million acres of forest area in the State was still in private ownership. The publicly owned forest lands in Georgia, as of December 5, 1938, are shown in table 11.

More than half of the privately owned forest land, 11½ million acres, is in farms, according to the Census of Agriculture for 1935, with an average per farm of 47 acres.

From a recent study of 226 privately owned nonfarm forest properties in various parts of the State, aggregating more than 3 million acres, the Southern National Forest Region of the Forest Service reported⁹ that approximately 35 percent of the land was managed according to good forestry practices, 64 percent was in fair-to-good productive condition either intentionally or accidentally, and only 1 percent was not in a productive condition. Three-fifths of the properties studied were less than 10,000 acres each. The purposes of management by the owners were as follows:

	Percent
Naval stores.....	45
Lumber—or lumber, pulpwood, and naval stores combined.....	26
Investment.....	16
Game preserves.....	7
Watershed protection.....	6

While an excellent start has been made in the practice of good forest management on this 3 million acres, it is believed that much of the remaining 17½ million acres of Georgia's privately owned (and generally farmer-owned) forest is not so well managed, since it is subjected to destructive methods of cutting and turpentine and to fire.

Wildlife Conservation and Forest Recreation

Wildlife conservation and forest recreation have been important activities in Georgia. Near Thomasville, Brunswick, Savannah, and Augusta are many large privately owned game preserves and hunting areas upon which game management is the primary purpose and timber growing secondary. The owners have been, or are likely to be, interested in harvesting and marketing their timber for lumber, pulpwood, and other products only if adequate cover for game can be maintained. More and more the need for publicly owned hunting and fishing preserves is being recognized. Publicly owned game refuges are being

TABLE 11.—Publicly owned forest land in Georgia¹

Ownership	County in which located	Survey unit	Area
			<i>Acres</i>
Federal:	McIntosh.....	Southeast.....	5,233
Biological Survey.....	Chatham.....	do.....	4,598
	Charlton, Clinch, Ware.....	do.....	296,824
National Military Parks:			
Kennesaw Mountain.....	Cobb.....	North-central.....	5,377
Chickamauga.....	Walker.....	North.....	4,819
Military reservations:			
Fort Benning.....	Chattahoochee.....	Central.....	85,932
National forests:			
Hitchiti Experimental Forest.....	Putnam.....	do.....	4,370
Chattahoochee National Forest.....	Fannin, Gilmer, Lumpkin, Habersham, Murray, Rabun, Towns, Union, White.....	North.....	598,970
Farm Security Administration.....		Central.....	109,060
Bureau of Agricultural Economics:			
Flatwoods area leased to Natural Resources Department, Georgia.....	Ware, Brantly.....	Southeast.....	32,000
State:			
University of Georgia.....	Hall.....	North-central.....	4,300
University of Georgia, Forest School.....	Greene.....	Central.....	540
State Forests:			
Baxley.....	Appling.....	Southeast.....	980
Gwinn Nixon.....	Richmond.....	Central.....	100
State parks (gross areas):			
Alex Stephens.....	Taliaferro.....	do.....	1,117
Pine Mountain.....	Harris.....	do.....	5,500
Chehaw.....	Dougherty.....	do.....	5,500
Indian Springs.....	Butts.....	do.....	159
Fort Mountain.....	Gordon.....	North.....	2,600
Vogel.....	Union.....	do.....	262
Oakmulgee.....	Telfair.....	Southeast.....	935
Santo Domingo.....	Glynn.....	do.....	370
Town forests:			
Newnan.....	Coweta.....	North-central.....	1,000
Manchester.....	Meriwether.....	do.....	1,800
Total.....			1,172,346

¹ As of Dec. 5, 1938.

developed rapidly, notably in the Okefenokee Swamp, on Blackbeard Island (south of Savannah), and in the Chattahoochee National Forest. Fish- and game-management areas also have been established in the Georgia Plantation-Piedmont project of the Resettlement Administration near Eatonton and in the Chattahoochee National Forest.

Public sentiment in favor of forest recreation is growing rapidly in Georgia. People are traveling more than ever before and the beauty of the forest is being realized and appreciated. Several excellent recreational forest areas have been developed by the State and by the Federal Forest Service, mostly in the mountains of north Georgia, but many more are needed.

⁹ See footnote 5.

Volume Estimates

Saw-Timber Volume

AT the time of survey, the net volume of saw timber in Georgia was 46 billion board feet—the greatest volume of any of the States in the deep South, and probably the greatest volume of any State east of the Mississippi River. This volume is measured by the International $\frac{1}{4}$ -inch log rule, which closely approximates

green lumber tally. All figures are net, deductions having been made for both woods and mill cull—portions of the tree which cannot be manufactured into lumber on account of fire scars, rot, sweep, crooks, bad knots, or other defects.

The pines, with loblolly pine predominating, make up more than 70 percent of the saw-timber volume; hardwoods, including cypress, less than 30 percent (table 12 and fig. 7). Central and north-central Georgia include almost three-

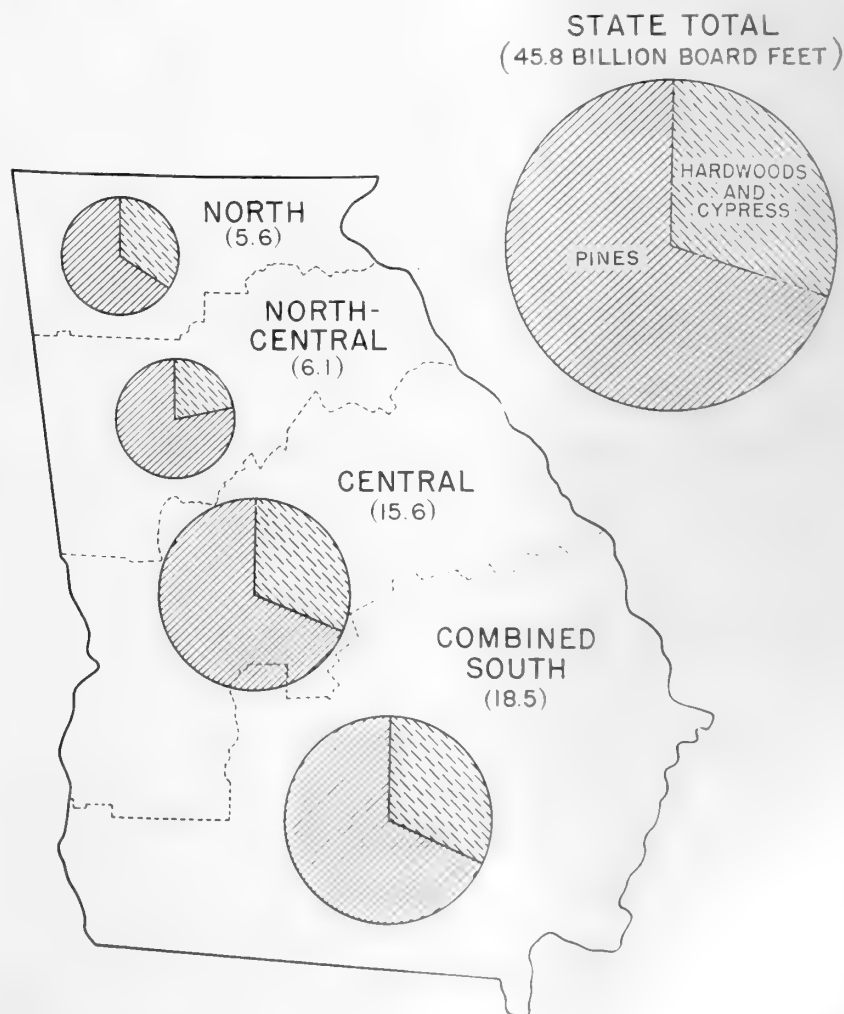


FIGURE 7.—Relative pine and hardwood saw-timber volumes by survey units. Figures in parenthesis indicate billions of board feet.

TABLE 12.—*Net board-foot volume¹ (lumber tally) in the various forest-condition classes, 1934–36*

Survey unit and species group	Old growth		Second growth			All forest conditions	
	Uncut	Partly cut	Sawlog size		Under saw-log size ³		
			Uncut	Partly cut			
South Georgia (1934):	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Percent</i>
Pines	1,365,500	2,341,000	6,754,200	900,200	1,214,700	12,575,600	67.9
Soft-textured hardwoods.....	1,531,900	1,246,000	1,275,100	232,800	147,900	4,433,700	23.9
Firm-textured hardwoods.....	699,100	326,600	369,000	75,000	40,700	1,510,400	8.2
Total.....	3,596,500	3,913,600	8,398,300	1,208,000	1,403,300	18,519,700	100.0
Central, north-central, and north Georgia (1936):							
Pines.....	1,473,300	940,600	12,008,200	4,504,900	767,800	19,694,800	72.2
Soft-textured hardwoods.....	930,400	626,900	1,703,800	838,000	92,500	4,191,600	15.4
Firm-textured hardwoods.....	792,500	558,200	1,311,900	576,600	153,500	3,392,700	12.4
Total.....	3,196,200	2,125,700	15,023,900	5,919,500	1,013,800	27,279,100	100.0
All units:							
Pines.....	2,838,800	3,281,600	18,762,400	5,405,100	1,982,500	32,270,400	70.5
Soft-textured hardwoods.....	2,462,300	1,872,900	2,978,900	1,070,800	240,400	8,625,300	18.8
Firm-textured hardwoods.....	1,491,600	884,800	1,680,900	651,600	194,200	4,903,100	10.7
All species	6,792,700	6,039,300	23,422,200	7,127,500	2,417,100	45,798,800	
	Percent 14.8	Percent 13.2	Percent 51.1	Percent 15.6	Percent 5.3		100.0

¹ Based on international 1/4-inch rule. Data presented in greater detail in table 40, appendix.² Cypress (1 1/8 billion board feet) is included in soft-textured hardwoods.³ Mainly in residual sawlog-size trees. Includes 199,400 M board feet in the reproduction and clear-cut classes.

fourths of the loblolly pine volume, and these two units together with north Georgia, contain practically all the shortleaf pine. The two south Georgia units include almost all of the slash pine and more than three-fourths of the longleaf pine. For the entire State, almost three-fourths of the volume of all species combined is in second-growth stands, and only one-fourth is in old growth. The volume of saw timber in pines, hardwoods, and cypress in the various survey units is shown in detail in tables 38 to 40,

appendix. Less than 15 percent of the saw-timber volume remains in old-growth stands in which no cutting has been done.

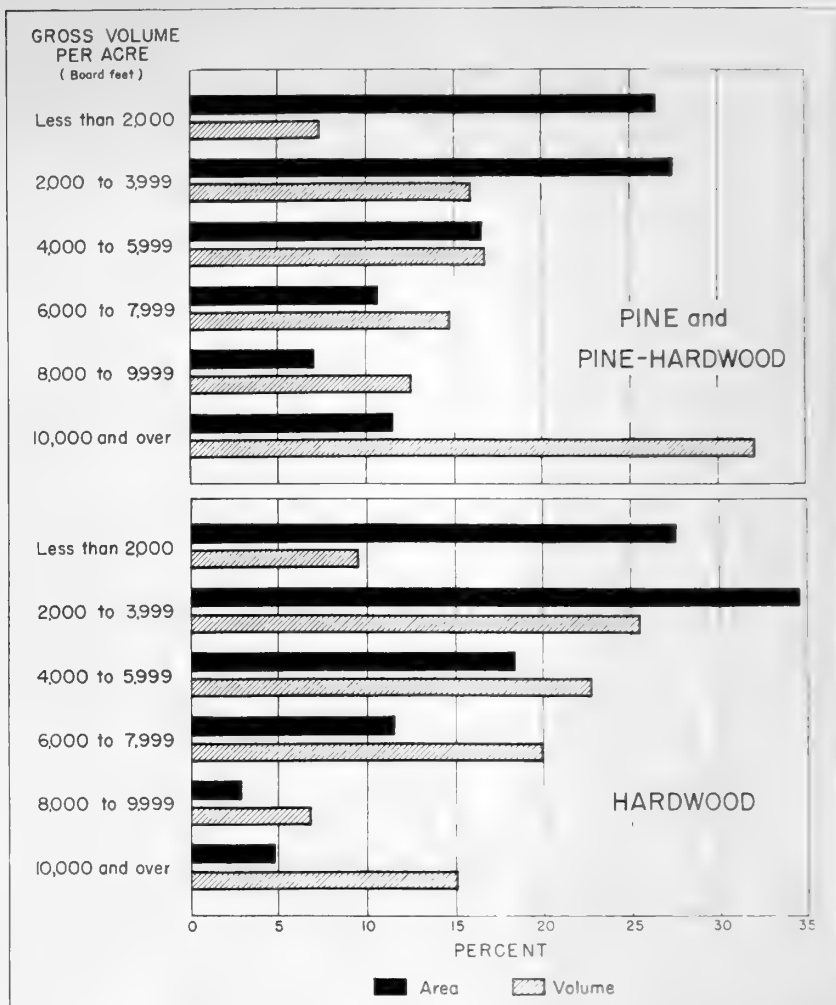
Because of the network of good highways and country roads and the mobile logging equipment used, practically all saw-timber stands are accessible for logging. According to the Survey classification, they average 3,800 board feet per acre, ranging from a minimum of 400 to as much as 10,000 or more.

TABLE 13.—*Diameter distribution of net board-foot volume (lumber tally), 1934–36¹*

Species group and diameter group (inches)	South Georgia (1934)		Central, north-central, and north Georgia (1936)		State total	
	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>
Pines:						
10–12.....	4,838,800	38.5	8,490,100	43.1	13,328,900	41.3
14–16.....	4,572,700	36.4	6,184,000	31.4	10,756,700	33.3
18–20.....	1,916,900	15.2	3,097,600	15.7	5,014,500	15.6
22+.....	1,247,200	9.9	1,923,100	9.8	3,170,300	9.8
Total.....	12,575,600	100.0	19,694,800	100.0	32,270,400	100.0
Hardwoods and cypress:						
14–18 ²	3,429,900	57.7	4,586,900	60.4	8,016,800	59.3
20–28.....	1,964,700	33.1	2,690,200	35.5	4,654,900	34.4
30+.....	549,500	9.2	307,200	4.1	856,700	6.3
Total.....	5,944,100	100.0	7,584,300	100.0	13,528,400	100.0

¹ Distribution by separate units given in table 41, appendix.² Includes 522,800 M board feet of cypress in the 10-inch and 12-inch classes.

FIGURE 8.—Distribution of area and volume of sawlog-size timber, by type groups in north-central Georgia, 1936, classified according to gross volume per acre (in board feet, International $\frac{1}{4}$ -inch-rule).



Distribution of Area and Volume of Sawlog-size Timber

Figure 8, which shows the proportional area and volume per acre of saw-timber stands in north-central Georgia, presents a pattern that is fairly typical of all the survey units of the State, even though the forest types may vary. The volumes are gross, as no deductions have been made for cull. Actual figures for area and volume for this and the other survey units are given in table 45, in the appendix. For the pine and pine-hardwood type groups, about 73 percent of the area and 93 percent of the volume are in stands ranging upward from 2,000 board feet per acre. For the hardwood type groups, more than 72 percent of the area and 90 percent of the volume are in stands of 2,000 board feet or more per acre.

Distribution of Saw-timber Volume by Size of Trees

Of importance to the forest-products industries is the fact that an extraordinarily large proportion of material at hand is in small trees normally of relatively less worth; of this material, 41 percent of the pine saw-timber volume is

TABLE 14.—Classification of pines, by percent of volume, according to grade of trees of saw-timber quality, in central and north-central Georgia

Species and stand condition	Smooth	Limby	Rough	Total
	Percent	Percent	Percent	Percent
Loblolly pine:				
Old growth	78	21	1	100
Second growth	29	61	10	100
Weighted average	37	54	9	100
Shortleaf pine:				
Old growth	81	19	0	100
Second growth	46	54	0	100
Weighted average	49	51	0	100
Longleaf pine:				
Old growth	100	0	0	100
Second growth	100	0	0	100
Weighted average	100	0	0	100
Loblolly, shortleaf, and longleaf pines:				
Old growth	81	19	0	100
Second growth	46	54	0	100
Weighted average	49	51	0	100

Source: U. S. Forest Service.

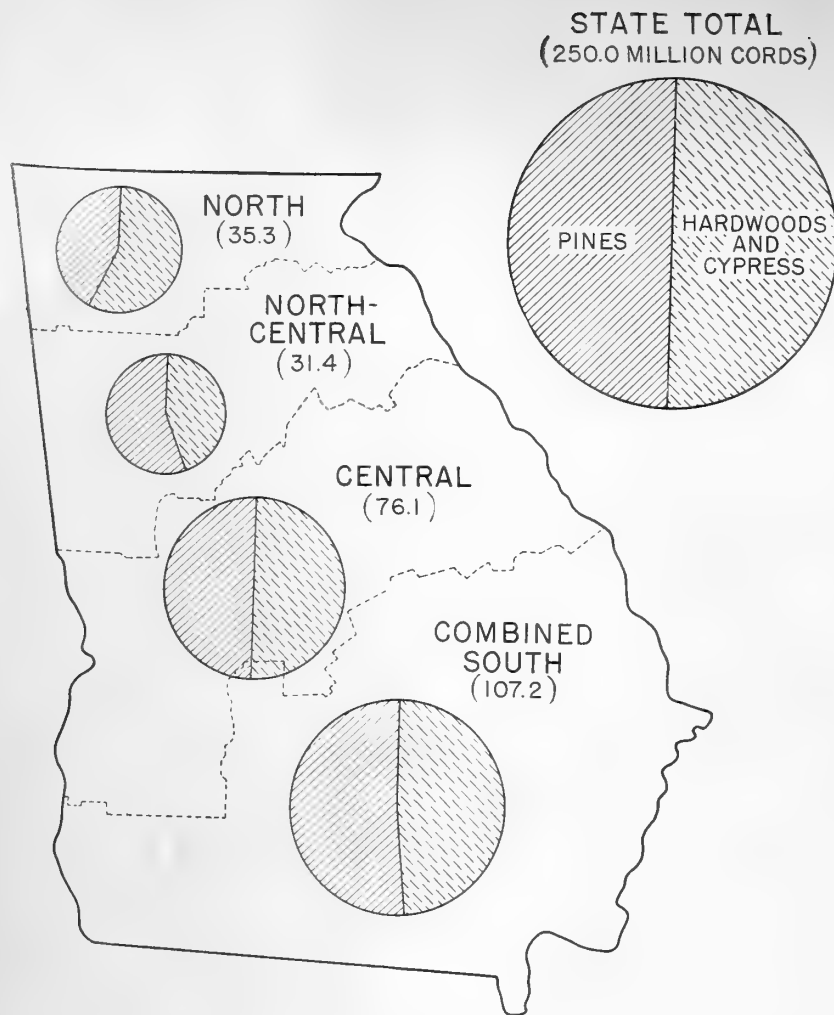


FIGURE 9.—Distribution of cordwood volumes as between pines and hardwoods-cypress in each survey unit. Figures in parenthesis indicate millions of cords.

in trees 9.0 to 12.9 inches d. b. h., and 59 percent of the hardwood volume is in trees 13.0 to 18.9 inches d. b. h. (table 13).

Much of the saw-timber volume in the three northern survey units of the State is in old-field stands in which the trees are too widely spaced to grow high-quality saw-logs. A classification of the pine saw-timber trees into smooth, limby, and rough was made as a part of a supplemental study for volume tables. As shown in table 14, which is based upon data taken in central and north-central Georgia only, about 40 percent of the pine saw-timber volume is in smooth trees, 52 percent is in limby trees, and 8 percent is in rough trees. As a general rule, pine trees in old-growth stands are superior in saw-timber quality to those in second-growth stands. Also considerable difference can be noticed among the pine species; loblolly pine trees are generally the limbiest, and longleaf pines, seldom found in old-field stands, are the

smoothest. The two units in south Georgia have a much smaller area of old-field stands and consequently exhibit a better proportion of smooth stems than the more agricultural units to the north.

Cordwood Volumes

At date of survey, the total net volume of usable cordwood, including saw-timber material, in both sound and cull trees 5.0 inches d. b. h. and larger, was about 250 million standard cords, almost equally divided between pines and hardwoods. As indicated in table 15, 43 percent of this total cordwood volume is in south Georgia; 30 percent in central Georgia; 13 percent in north-central Georgia; and 14 percent in north Georgia. Figure 9 and table 15 indicate the distribution of this total as between pines and hardwoods-cypress in each survey unit.

This cordwood volume, as shown in table 16, includes:

1. The merchantable stems of sawlog-size trees (same material as that previously shown as saw timber).
2. The upper portion of saw-timber trees not suited for sawlogs but usable as cordwood. This includes the upper stems of all species to a variable top diameter (but not less than 4 inches), and the limbs of hardwoods and cypress to a minimum of 4 inches outside bark.

3. Sound trees under sawlog size at least 5.0 inches

TABLE 15.—Distribution of total net cordwood volume by survey unit¹

Survey unit	Pine		Hardwoods and cypress		All woods	
	Million cords	Percent	Million cords	Percent	Million cords	Percent
Southeast.....	38.4	31	41.6	34	80.0	32
Southwest.....	16.8	13	10.4	8	27.2	11
Central.....	37.7	30	38.4	31	76.1	30
North-central.....	17.7	14	13.7	11	31.4	13
North.....	14.9	12	20.4	16	35.3	14
Total.....	125.5	100	124.5	100	250.0	100

¹ Including saw timber as of date of survey, 1934-36. For detailed record by survey unit and quality class of cordwood material see table 43 in the appendix.

TABLE 16.—*Net cordwood volume in various classes of sound material*¹

Quality class	Pine	Hardwoods			All species	
		Soft-textured	Firm-textured	Total		
Sound trees sawlog size:	<i>Million cords</i>	<i>Million cords</i>	<i>Million cords</i>	<i>Million cords</i>	<i>Million cords</i>	<i>Percent</i>
Sawlog portion.....	72.1	21.7	12.5	34.2	106.3	42.5
Upper stems.....	14.7	² 11.1	² 7.2	² 18.3	33.0	13.2
Sound trees under sawlog size.....	36.2	28.0	17.0	45.0	81.2	32.5
Sound and rotten cull trees.....	2.5	13.4	13.6	27.0	29.5	11.8
	125.5	74.2	50.3	124.5	250.0	
All classes.....	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>		
	50.2	29.7	20.1	49.8		100.0

¹ Bark included; as of date of survey 1934-36. For detailed record see table 43 in the appendix.

² Upper stems and limbs.

d. b. h.; here the entire stem of all species is included to a variable top diameter (but not less than 4 inches).

4. The estimated sound material in rotten and sound cull trees, including scrub oaks, all of which are classed as culls.

Most of the pine cordwood volume in live, sound trees (cull trees omitted) and about one-half of the hardwood volume is in trees less than 13 inches d. b. h. (fig. 10).

In this report, cull trees and the upper stems and limbs of sawlog-size hardwoods and cypress (48 million cords) are not considered as part of the growing stock or basic asset on which growth and drain are computed. Of approximately 202 million cords of growing-stock material, 106 million is in saw timber, 15 million in upper stems of sawlog-size pine, and 81 million in trees under sawlog size (table 16). For the entire forest the volume of growing-stock trees averages almost 10 cords per acre. Uncut old-growth stands, all types combined, have much the heaviest volume per acre (table 17).

Fuel and pulp are the principal uses for cordwood material that is unsuited for saw timber. Most species are useful for fuel, but pines and soft-textured hardwoods such as the gums are preferred for pulpwood under present practices. Firm-textured hardwoods, such as the oaks, are not commonly pulped at present but may be in the future. Not included is a volume of chestnut, roughly estimated to be about 2 million cords, mostly in blight-killed trees in north Georgia. Some of this dead material is cut into lumber, and small quantities are used for tannic-acid extraction and for fuel and fence posts.

The competitive demand for saw timber and its present and prospective stumpage value for lumber, cross ties, veneer, poles, and piles should encourage the holding of

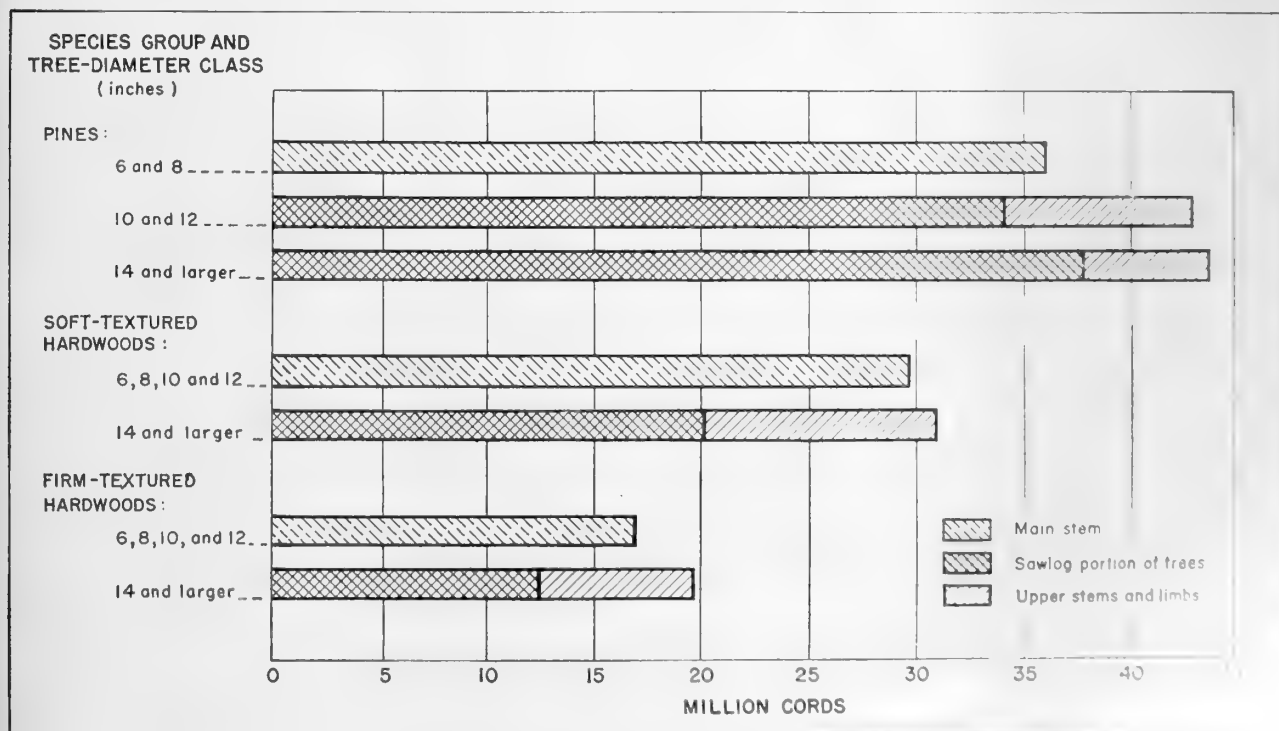
FIGURE 10.—*Cordwood volumes by species groups and size classes, sound trees only (1934)*

TABLE 17.—Average volume of cordwood per acre in growing-stock trees¹

Area and forest type group	Old growth		Second growth			All conditions ³
	Uncut	Partly cut	Sawlog size		Under sawlog size ²	
			Uncut	Partly cut		
South Georgia (1934):	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>
Longleaf-slash pines.....	20.0	12.1	12.6	12.5	3.6	7.1
Loblolly-other pines.....	22.5	14.6	16.6	12.9	4.0	12.1
Hardwoods.....	27.2	18.2	18.9	14.7	3.1	14.0
Cypress.....	21.1	17.9	24.5	13.4	4.9	14.2
Weighted average, all types.....	24.0	14.0	14.1	12.8	3.6	8.8
Central, north-central, and north Georgia (1936):						
Loblolly-shortleaf pines.....	28.7	15.0	17.9	11.1	3.7	11.0
Loblolly, shortleaf, other pines, and hardwoods.....	26.4	18.4	15.5	12.5	3.4	8.7
Upland hardwoods.....	13.1	11.4	10.3	9.5	3.6	7.4
Bottom-land hardwoods.....	28.2	19.9	21.2	15.6	6.5	16.7
Weighted average, all types.....	21.9	15.6	16.7	11.6	3.8	10.4

¹ Bark included; data in greater detail in table 47, appendix.² Does not include areas of reproduction or of clear-cut forest condition.³ Includes areas of reproduction and clear-cut forest conditions.

the better under-sawlog-size trees in the growing stock for such uses. The trees held should exhibit smoothness and other indications of quality, as well as rapidity of growth. Cutting operations in these stands should include an addi-

tional 30 million cords in cull trees, or 12 percent of the entire usable cordwood volume, which should be taken to make room for more desirable trees and the establishment of the seedlings necessary to a continuous succession of forest crops. Cull trees of species commonly considered suitable for pulping (pine, soft-textured hardwoods, and cypress) contain almost 16 million cords of sound, usable wood.

Poles and Piles

Georgia has a good market for the clean, straight pine trees that meet the exacting specifications for poles and piles. At the date of survey, there were more than 65 million such trees. Although included in preceding estimates of volume, these trees deserve a separate inventory (table 18), owing to the high stumpage prices paid for them. Estimates are believed to be conservative. More than three-fifths of the sticks are in trees less than 11.0 inches d. b. h., and most of them are 20 and 25 feet long and are of comparatively low value. A growing tendency to use shorter poles is noted in rural areas, however, especially since the organization of such agencies as the Tennessee Valley Authority and the Rural Electrification Administration.

As a rule, the trees suitable for poles and piles occur singly or in scattered groups throughout the forest, usually on the better sites and in the denser stands, where crowding has produced long, clear stems.

TABLE 18.—Pine pole and pile timber by length of stick¹

Survey unit and species group	Pole or pile length (feet)						All lengths	
	20	25	30	35	40	45 and over		
Southeast, 1934:	<i>M sticks</i>	<i>M sticks</i>	<i>M sticks</i>	<i>M sticks</i>	<i>M sticks</i>	<i>M sticks</i>	<i>M sticks</i>	<i>Percent</i>
Round longleaf and slash pines.....	4,835	1,650	990	452	233	218	8,378	
Turpentine longleaf and slash pines.....	7,144	3,574	2,033	1,376	853	327	15,307	
Loblolly, shortleaf, and other pines.....	691	517	386	258	106	122	2,080	
Total.....	12,670	5,741	3,409	2,086	1,192	667	25,765	39.4
Southwest, 1934:								
Round longleaf and slash pines.....	3,013	1,048	629	288	137	113	5,228	
Turpentine longleaf and slash pines.....	2,061	1,013	553	377	243	73	4,320	
Loblolly, shortleaf, and other pines.....	332	227	141	86	39	22	847	
Total.....	5,406	2,288	1,323	751	419	208	10,395	15.9
Central, 1936:								
All species.....	4,235	3,121	2,084	973	529	362	11,304	17.3
North-central, 1936:								
All species.....	3,207	1,685	1,334	477	318	227	7,248	11.1
North, 1936:								
All species.....	5,627	2,273	1,805	715	209	46	10,675	16.3
Total.....	31,145	15,108	9,955	5,002	2,667	1,510	65,387	
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>		
	47.7	23.1	15.2	7.6	4.1	2.3		100.0

¹ Based on the specifications of the American Standards Association. Diameter classification of pole and pile timber for naval stores and pine-hardwood regions given in table 44, appendix.

Forest Increment

FOREST increment, as used in this report, is the difference between the net volumes of growing stock of usable size at the beginning and end of a year, before deducting the commodity drain. Board-foot increment is made up of the growth on sawlog-size trees plus the board-foot volume of trees reaching sawlog size during the year, minus deductions for mortality. Cordwood increment represents (1) the growth on the sound-stem wood of pines 5.0 inches d. b. h. and larger, on under-sawlog-size hardwoods (including cypress), and on the sawlog portion of hardwoods 13.0 inches d. b. h. and larger; (2) plus the total volume in pines and hardwoods that became 5.0 inches d. b. h. or larger during the year; and (3) minus deductions for mortality. In no calculations are cull trees or the upper stems and limbs of sawlog-size hardwoods considered.

In 1937, the gross growth was 3,363.7 million board feet (lumber tally), and the mortality 861.6 million feet, leaving a net increment of 2,502.1 million. The net increment for all growing-stock material of trees 5.0 inches d. b. h. and larger amounted to 643 million cubic feet, bark excluded, or almost 9 million cords, including the bark. Georgia had a greater net forest increment in 1937 than any other State in the lower South.

In south Georgia during 1934, less than 8 percent of the net increment of saw-timber material occurred in old-growth stands; 58 percent was in second-growth stands of sawlog timber, and 34 percent in stands under sawlog size (table 19). Despite a net loss for the year in old-growth pine, pines made up 71 percent of the net saw-timber increment. In central and north Georgia in 1936, about 80 percent of the increment was in pines. Of the 2-million-

TABLE 19.—Net increment in board feet, cubic feet, and cords¹

Area and forest condition ²	Saw-timber material (lumber tally)				All material—cubic volume (inside bark)				Cordwood volume (outside bark) including saw timber			
	Pine	Hard-wood ³	Total increment		Pine	Hard-wood ³	Total increment		Pine	Hard-wood ³	Total increment	
South Georgia, 1934:	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Percent</i>	<i>M cubic feet</i>	<i>M cubic feet</i>	<i>M cubic feet</i>	<i>Percent</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Percent</i>
Old growth.....	38,800	86,600	47,800	7.8	13,210	19,040	5,830	4.2	162,300	287,400	125,100	6.0
Second growth:												
Sawlog size.....	280,100	79,400	359,500	58.4	39,480	31,130	70,610	50.3	545,800	482,300	1,028,100	49.3
Under sawlog size.....	196,200	11,600	207,800	33.8	54,740	9,180	63,920	45.5	786,100	145,000	931,100	44.7
All conditions.....	437,500	177,600	615,100	.....	81,010	59,350	140,360	.....	1,169,900	914,700	2,084,600	.....
	<i>Percent</i>	<i>Percent</i>			<i>Percent</i>	<i>Percent</i>			<i>Percent</i>	<i>Percent</i>		
	71.1	28.9	100.0		57.7	42.3	100.0		56.1	43.9	100.0	
Central, north-central, and north Georgia, 1936:	<i>M board feet</i>	<i>M board feet</i>			<i>M cubic feet</i>	<i>M cubic feet</i>			<i>Cords</i>	<i>Cords</i>		
Old growth.....	18,600	83,200	101,800	5.6	3,710	21,890	25,600	5.6	48,100	327,000	375,100	5.9
Second growth:												
Sawlog size.....	969,200	230,900	1,200,100	66.6	178,780	76,130	254,910	56.0	2,338,000	1,163,800	3,501,800	80.0
Under sawlog size.....	449,900	51,300	501,200	27.8	140,110	34,610	175,050	38.4	1,918,600	544,700	2,463,300	56.0
All conditions.....	1,437,700	365,400	1,803,100	.....	322,600	132,630	455,230	.....	4,304,700	2,035,500	6,340,200	.....
	<i>Percent</i>	<i>Percent</i>			<i>Percent</i>	<i>Percent</i>			<i>Percent</i>	<i>Percent</i>		
	79.7	20.3	100.0		70.9	29.1	100.0		67.9	32.1	100.0	

¹ Detail by separate units given in table 48, appendix, for saw timber and cordwood.

² "Under sawlog size" includes reproduction and clear-cut areas.

³ Including cypress.

cord increment of hardwoods, as of the year of the survey, it is estimated that more than half was in soft-textured species.

Excluding the effect of cutting in all cases, the average net annual increments per acre in Georgia compare favorably with those in other States. In central Georgia in 1936, the weighted average, with reproduction and clear-cut areas included, was 195 board feet of saw timber (table 20), or two-thirds of a cord including bark for all growing-stock trees 5.0 inches d. b. h. and larger. This is one of

the highest average increments per acre found in any survey unit in the entire lower South territory. Net increments in north-central Georgia were almost as great; in north Georgia, where the sites are poorer, they were about half as high; and in south Georgia, where turpentine and fire retard the growth and increase mortality, about a third as high. As a general rule, the greatest average net increment per acre occurred in the uncut second-growth stands of sawlog-sized timber.

TABLE 20.—Average net increment per acre, excluding effect of cutting¹

Forest condition ²	Combined South Georgia (1934)		Central Georgia (1936)		North-central Georgia (1936)		North Georgia (1936)		State average	
	Board feet	Cords	Board feet	Cords	Board feet	Cords	Board feet	Cords	Board feet	Cords
Old growth.....	32	0.08	168	0.58	141	0.50	28	0.14	62	0.20
Second growth:										
Sawlog size.....	110	.31	247	.72	258	.77	145	.41	181	.52
Under sawlog size.....	56	.25	157	.73	115	.63	73	.40	91	.44
Weighted average.....	63	.21	195	.67	181	.66	99	.36	117	.41

¹ Detail by species groups given in table 49, appendix.

² Weighted average includes the reproduction and clear-cut conditions.

Forest Industries

Gum Naval Stores

THE harvesting of gum from living longleaf and slash pines and its processing into rosin and turpentine is a major forest industry in south Georgia. The industry included, in the 1934-35 season, 635 active turpentine stills (fig. 11)—the largest concentration of gum naval stores manufacturing in the United States. In addition there were approximately 10,000 gum producers without stills. Approximately 7,000 crops of 10,000 cups each were worked in the 1934-35 season, producing 300,000 naval stores units with a total value of more than \$15,000,000. In the 1936-37 season, although only 272,000 units

were produced, a more favorable unit price increased the value of the yield to about \$16,500,000.

Approximately 8 million acres, or 79 percent of the forest land in south Georgia, was classified by the Survey in 1934-35 as turpentine land (table 21 and fig. 12). Distribution of this area was as follows:

Stands	Percent
Well-developed.....	43
Advanced sapling.....	11
Young sapling.....	15
Reproduction and clear-cut.....	27
Intermingled nonturpentine.....	4

100

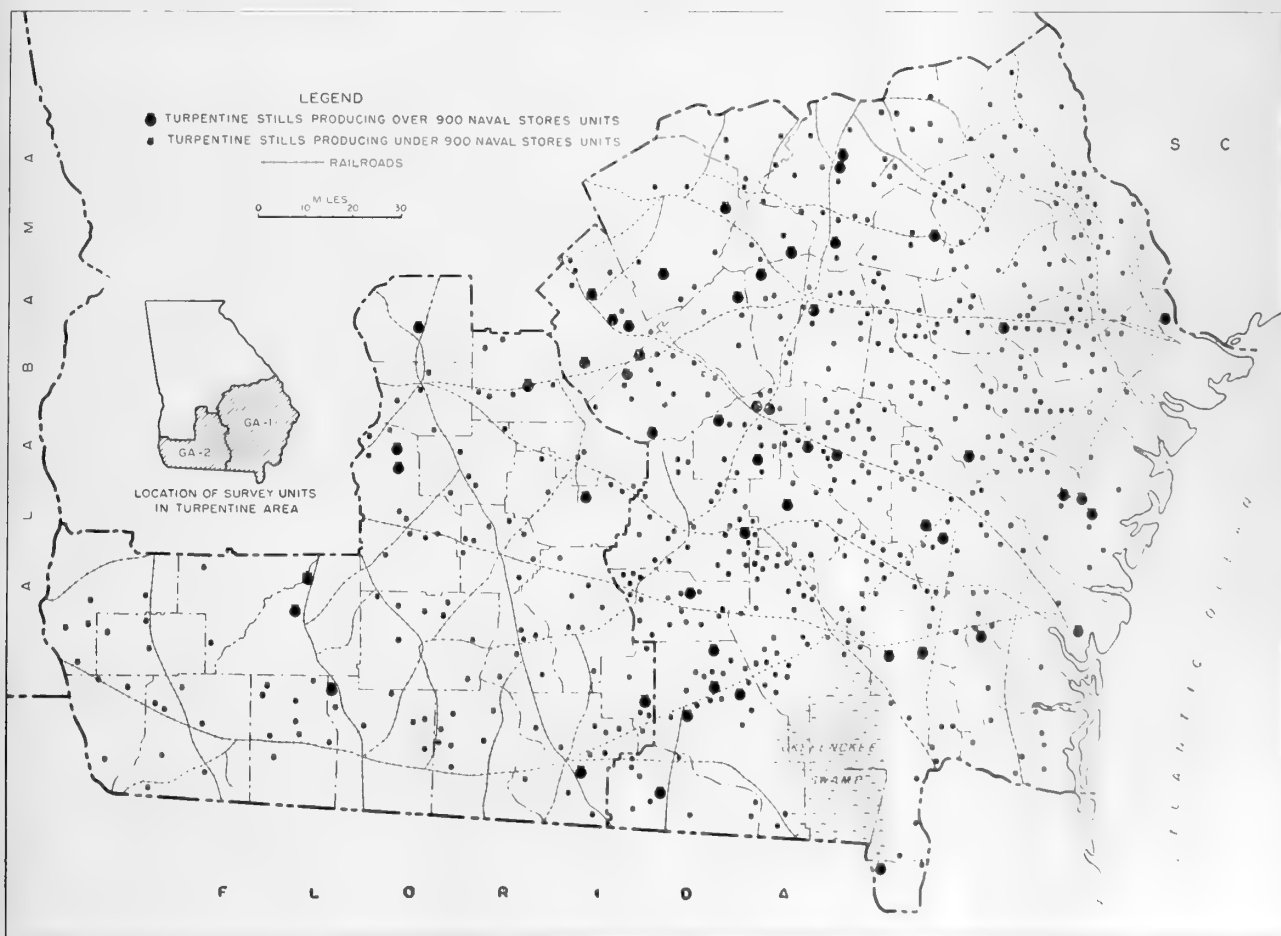


FIGURE 11.—Turpentine stills in south Georgia, 1934.

The well-developed turpentine stands had an average of 23 and a minimum of 8 possible faces per acre on round, resting, or working trees at least 9 inches d. b. h., or sufficient to warrant working under present practices. The advanced sapling stands had a sufficient number of round trees, largely in the 8-inch diameter class, to be ready for working within 8 years. Young sapling stands, made up chiefly of 2-, 4-, and 6-inch trees, would require about 15 years of additional growth before reaching working condition. Reproduction and clear-cut stands would need more than 20 years of further development.

Present Areas

For descriptive purposes, the turpentine area has been classified according to crop history (table 35, appendix).

TABLE 21.—*Turpentine status of productive forest areas of south Georgia on different topographic situations, 1934*

Survey unit and turpentine history	Flat-woods	Rolling uplands	Swamps, bays, etc.	All situations	
Southeast:					
Turpentine area:					
Working:	Acres	Acres	Acres	Acres	Per cent
Front-faced	139,400	73,900	53,700	267,000	4.8
Back-faced	1,271,700	888,800	638,300	2,798,800	49.9
Total working	1,411,100	962,700	692,000	3,065,800	54.7
Resting and worked out	844,500	427,300	398,500	1,670,300	29.8
Round	370,500	262,300	235,000	867,800	15.5
Total turpentine	2,626,100	1,652,300	1,325,500	5,603,900	100.0
Nonturpentine area	279,400	157,300	1,015,600	1,452,300	-----
Total commercial forest area	2,905,500	1,809,600	2,341,100	7,056,200	-----
Southwest:					
Turpentine area:					
Working:					
Front-faced	35,900	122,200	33,600	191,700	8.1
Back-faced	169,400	397,800	95,100	662,300	28.1
Total working	205,300	520,000	128,700	854,000	36.2
Resting and worked out	168,600	492,100	189,200	849,900	36.1
Round	71,100	486,500	95,900	653,500	27.7
Total turpentine	445,000	1,498,600	413,800	2,357,400	100.0
Nonturpentine area	23,100	294,800	338,700	656,600	-----
Total commercial forest area	468,100	1,793,400	752,500	3,014,000	-----
Total:					
Turpentine area:					
Working:					
Front-faced	175,300	196,100	87,300	458,700	5.8
Back-faced	1,441,100	1,286,600	733,400	3,461,100	43.5
Total working	1,616,400	1,482,700	820,700	3,919,800	49.3
Resting and worked out	1,013,100	919,400	587,700	2,520,200	31.6
Round	441,600	748,800	330,900	1,521,300	19.1
Total turpentine	3,071,100	3,150,900	1,739,300	7,961,300	100.0
Nonturpentine area	302,500	452,100	1,354,300	2,108,900	-----
Total commercial forest area	3,373,600	3,603,000	3,093,600	10,070,200	-----

Round-timber areas are those in which practically all of the slash and longleaf pines, both young and old, are unworked and in sufficient quantities to justify working. Round-timber stands occupy more than 1½ million acres, or 19 percent of the turpentine area. Most of them can be worked in connection with present naval stores operations.

Working areas where turpentine operations are in progress and trees are cupped for the first time are known as front-faced; those where the main body of trees is being worked a second time are called back-faced. The 4 million acres of working turpentine area furnished the gum naval stores production of the 1934-35 season and will play a large part in the production for the decade following; nearly 3½ million acres was back-faced and approximately half the cups were on back faces. Almost 1¼ million acres, or 42 percent of the working area, had an average of 33 cups per acre on working trees, which should furnish approximately 21 back faces per acre during the next 8 years. Associated round trees, reaching turpentine size within this period, will furnish additional faces.

Areas in which the front faces had been worked out and the trees were being rested before further operation of the back faces, and areas in which all the trees of working size had been completely worked out, both front and back faces, were grouped together in the field classification; they occupied approximately 2½ million acres, or 32 percent of the turpentine area. About half of this area had an average of 18 future back faces per acre in addition to potential faces on 6 round trees in the 10-inch diameter class. There were also about 80 round trees of various sizes less than 9.0 inches d. b. h.

Future Supplies

On the assumptions that in the future a 9-inch minimum-diameter limit for turpentine will be rather closely adhered to, presumably not before 1950 will the number of small trees attaining proper turpentine size be sufficient to meet the normal requirements for round timber. About that year, however, and thereafter it is estimated that annual requirements will be met for new round and back-cup trees 9 inches d. b. h. and larger. Actual increase in the stand of turpentine pines between 1934 and 1938 is given in table 36, appendix.

Computations of future supply have been based upon the assumption that all living round and working longleaf and slash pine trees will be available for naval stores operation. If sawlogs, pulpwood, and other forest products are taken from unworked trees in increased numbers in the future, the supply of round trees for the gum naval stores industry will, of course, be reduced. In the interindustry competition for round trees, the stumpage prices paid the

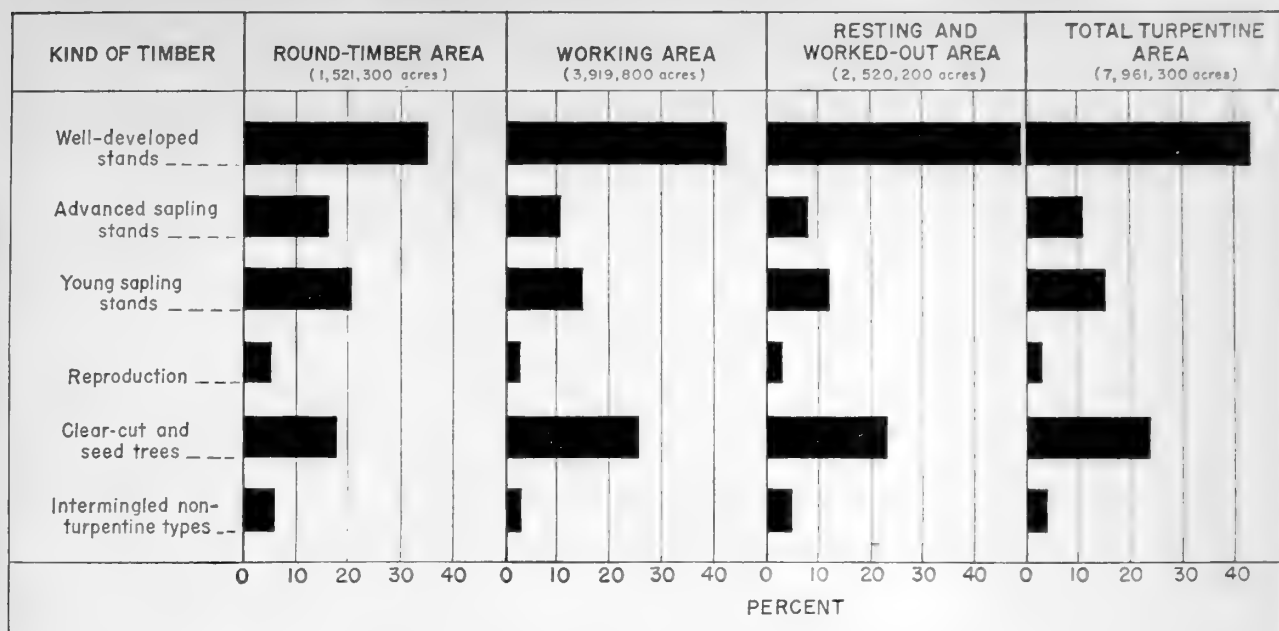


FIGURE 12.—Condition of the turpentine area in south Georgia, 1934.

owner will no doubt determine which course he will take. With normal market conditions and stumpage prices, it can be expected that the gum naval stores industry will continue to have first call on most of the round longleaf and slash pine timber.

In short, the supply of timber in sight is sufficient to maintain the gum naval stores industry after 1950, provided this industry is able to compete successfully with other industries for the available timber. Until that date, the scale of working operations may have to be reduced somewhat.

Effect of Turpentine on Forest Increment

Deep chipping, inserting tins too deeply, cupping small trees, and hanging too many cups on the trees, together with accompanying "protection" fires and the failure to protect resting or worked-out trees from fire, not only retard the diameter growth of the individual trees but also increase the losses from wind throw, insects, and disease.

It is estimated that the loss of volume due directly and indirectly to turpentine amounted during 1934 to approximately 665 million board feet of saw timber (table 22), or almost 2 million cords in trees 5.0 inches d. b. h. and larger. Improved naval stores practices, better control of fire, more intensive forest management, and closer wood-products utilization can greatly reduce this loss.

Wood Naval Stores

One large wood naval stores plant in Georgia uses the steam-solvent process and from the seasoned stumps of

longleaf pine obtains rosin, wood turpentine, pine oil, and many other chemicals. Also, two destructive distillation plants, operating largely on lightwood (i. e., the heartwood from the stems and limbs of dead longleaf and slash pines) produce crude pine oil, its derivatives, and charcoal. About 255,000 man-days (10 hours each) of employment were provided in 1936 by the entire wood naval stores industry of Georgia.

TABLE 22.—Effect of turpentine on forest increment in south Georgia, 1934.

Item	If left round		As turpentine		Turpentine net loss	
	M'board feet	M'cords	M'board feet	M'cords	M'board feet	M'cords
Growth	657,300	1,367	342,000	849	314,700	518
Mortality	107,200	319	407,500	1,675	300,300	
Loss in butt volume					49,000	7
Total loss					664,000	

Board-foot volumes expressed as rounded figures.

Suitable supplies of merchantable stumps (4 to 6 inches high) are found mainly in the heartwood of the longleaf pine and longleaf-slash pine, and in the oak types that often occupy the same areas. On lands where young trees are well-established, owners often object to the removal of stumps, since the losses from the removal of stumps may exceed the returns from the sale of the stumps.

In 1934 the Forest Service estimated that there were 1 million acres in south Georgia where stumps were

growth longleaf pine stumps (table 23), the area in the rest of Georgia being negligible. About three-fourths of this area had at least 6 stumps per acre. Approximately 55 percent of the stump tonnage was in the flatwoods; practically all of the remainder was in the rolling uplands.

Stumps are extracted commercially by pulling or blasting. It is estimated that in 1934 there were, on a blasting basis, about 7½ million tons of stumps. An additional potential source of about 8 million tons (not shown in the table) is in unseasoned stumps and in stumps that are located in dense stands of young growth and are not now considered available. When the present stands of old-growth longleaf pine are cut and the resulting stumps are seasoned for about 10 years, there will be an appreciable additional supply. The survey made no attempt to estimate the volume of seasoned top wood, which is also used in the production of wood naval stores.

TABLE 23.—Stand of merchantable stumps (blasting basis), on different topographic situations¹ in south Georgia, 1934

Stumps per acre	Area	Flat-woods	Rolling uplands	River bottoms, swamps, bays, etc.	All situations	
	<i>Acres</i>	<i>1,000 tons</i>	<i>1,000 tons</i>	<i>1,000 tons</i>	<i>1,000 tons</i>	<i>Per-cent</i>
5 or less.....	618,600	88	149	10	247	3.2
6 to 13.....	695,800	604	756	32	1,392	18.1
14 to 25.....	583,500	1,250	1,007	78	2,335	30.4
26 or more.....	494,000	2,250	1,369	86	3,705	48.3
Total.....	2,391,900	4,192	3,281	206	7,679	100.0

¹ Detail for all survey units and distribution by stumps per acre given in table 37, appendix

Lumber

Lumber and other wood-products industries have been important factors in the development of the "Empire State of the South." In colonial days, squared pine and cypress timbers for export, and live oak for ship timbers were the principal wood products. At first, these industries were confined to the main rivers and along the coast, with centers of activity at Savannah, Brunswick, and Darien. Beginning in the longleaf-slash pine forests of southern Georgia, the lumber industry gradually spread northward to the mountains and grew from a negligible production by a few small sawmills in the early 1800's to a peak of 1,390 million board feet in 1929. By 1932, however, owing mainly to depressed business conditions, lumber production fell to 260 million board feet.

In 1937 there were 1,607 sawmills in Georgia, and the lumber cut was estimated by the survey to be 941 million board feet, of which more than four-fifths was pine. The findings of the survey as to number, size, and character

of the sawmills for that year are shown in table 24 and figure 13.

TABLE 24.—Number of sawmills, quantity of lumber produced, and man-days of employment provided in woods and mills,¹ 1937

Daily 10-hour capacity in M board feet	Sawmills	Lumber produced			Employment
		Pine	Hard-wood ²	Total	
	<i>Number</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Thousand man-days</i>
Under 20.....	1,555	631,600	61,100	692,700	2,150
20-39.....	43	103,700	63,500	167,200	535
40-79.....	9	35,900	45,400	81,300	327
Total.....	1,607	771,200	170,000	941,200	3,012

¹ Detail for sawmills by survey units given in table 50, appendix. For similar detail regarding employment, see table 51, appendix.

² Including about 25,500 M board feet of cypress.

About 97 percent of all the sawmills in Georgia are small, with a daily capacity of less than 20,000 board feet. Only 3 percent of the mills have a daily capacity of 20,000 board feet or more, of which two-thirds are in south Georgia. Most of the small mills, which run only occasionally, are moved about for small, scattered patches of timber. More than half the mills were in central and north-central Georgia, where the main cut is from second-growth old-field pine stands. Most of this timber is cut into 1-inch boards (commonly called "roofers") and scantlings. In 1937, all the sawmills combined furnished 3 million man-days of employment in woods and plants. On the basis of 100 days average per man, this indicates the full- or part-time employment of 25,000 to 35,000 men.

Approximately half of Georgia's production of lumber is used locally; the other half is shipped out of the State much of it in a rough or semifinished form which brings small returns to the mills, with resulting low wages to workers. If this could be processed locally into furniture, sash, doors, moldings, finished lumber, and other forms ready for consumption, the people of Georgia would receive several times their present returns from wood products.

Other Wood-Products Industries

In 1937 there were 25 veneer mills in Georgia, using 73 million board feet of logs for veneer, providing part or full-time employment for 3,500 to 4,500 men, at an estimated average of 100 days a year (table 25). Most of these plants make veneer for fruit and vegetable boxes, crates, hampers, and baskets; a few manufacture plywood veneers. The principal woods used are pines, black gum, tupelo gum, red gum, yellow-poplar, magnolia, and bay. As only large, clear, high-quality logs

are suitable for veneer, some of the plants are finding it increasingly difficult to obtain their raw materials locally.

Within the State are 36 stave and heading plants, most of them in southeast Georgia manufacturing pine rosin barrels. A few, however, make hardwood staves, mainly

for slack cooperage, barrel heads, and hamper bottom and tops. This industry used approximately 64,500 cords in 1937 and provided at least part-time employment to some 1,250 to 1,500 men.

In the last few years, as a part of the widespread and

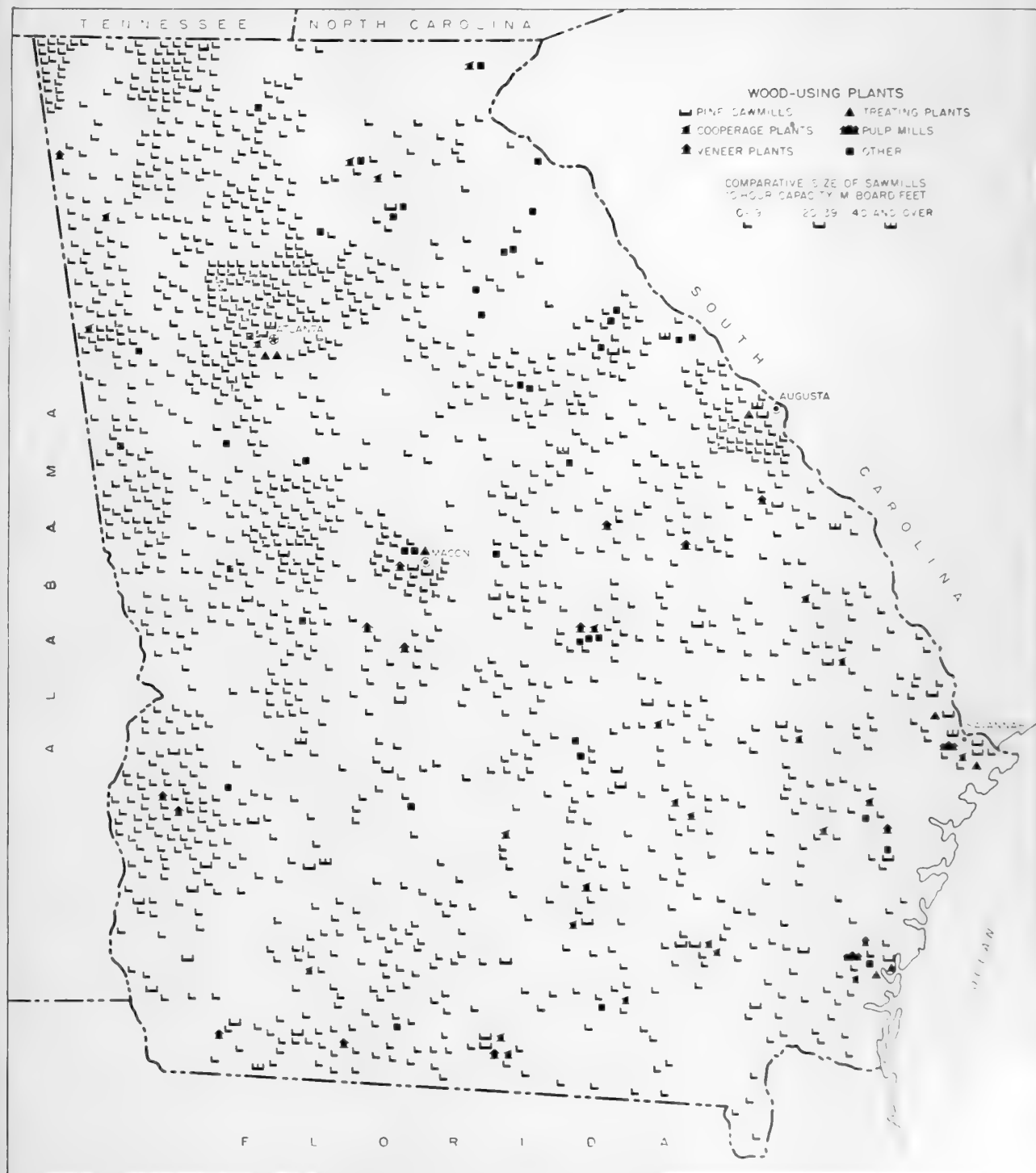


FIGURE 13.—Forest industries in the State of Georgia, 1937.

TABLE 25.—*Wood products and employment, 1937*¹

Industry or commodity	Units produced	Employment		
		In woods	At plants	Total
	<i>M board feet</i>	<i>Thousand man-days</i>	<i>Thousand man-days</i>	<i>Thousand man-days</i>
Lumber.....	941,200	1,082	1,930	3,012
Veneer.....	72,700	150	256	406
	<i>Pieces</i>			
Cross ties.....	2,282,000	316		316
Poles and piles.....	234,000	43		43
Fence posts.....	14,622,000	198		198
Treating plants.....			69	69
	<i>Cords</i>			
Fuel wood.....	3,645,200	5,056		5,056
Cooperage.....	64,900	60	82	142
Miscellaneous (including pulpwood).....	204,300	275	298	573
Total man-days of employment.....		7,180	2,635	9,815

¹ For data by survey units see table 51, appendix.² Does not include about a million cords of fuel wood derived from saw-mill waste and other secondary sources.

important movement of pulp mills to the south, three pulp mills have located in south Georgia—one each at Savannah, Brunswick, and St. Marys. Only one of these was operating in 1937, but when all are operating full time, they will consume over 550,000 cords of wood annually (most of it from Georgia) and will presumably supply part- or full-time work for 8,000 to 12,000 men. Other pulp mills located nearby in Florida, Tennessee, and the Carolinas took only a small amount of pulpwood from Georgia in 1937 but in the near future will probably draw on this State for a considerable portion of their supply.

In 1937 approximately 4¼ million cords of wood was consumed for fuel. Most of this was used in homes, on farms, and in small towns, but almost 0.5 million cords

went into turpentine stills, cotton gins, sirup plants, tobacco barns, laundries, and ice plants.

In 1937 approximately 234,000 poles and piles were produced, supplying woods work for 400 to 450 men. Practically all were pine, mostly from south Georgia. To meet exacting specifications, the larger poles and piles must be taken from the highest-quality material of the growing stock. That same year (1937) railroads used about 2¼ million cross ties, providing woods work for another 3,000 or more men. Of these ties 51 percent were pine, 34 percent were cypress, and 15 percent hardwood (mostly gums and oaks). The 6 wood-treating plants in the State gave employment to several hundred men, mostly in treating poles, piles, and cross ties. Also 14½ million fence posts, most of them used locally on farms, were produced in 1937.

In addition to the plants previously mentioned, there were in 1937 at least 63 others of small size, including handle plants using hickory and ash; bobbin or shuttle mills using dogwood and persimmon; excelsior mills using pine; and shingle mills using cypress and pine.

Employment

The industries just enumerated, exclusive of the naval stores industry, furnished nearly 10 million man-days of employment in 1937. Excluding the labor involved in producing fuel wood and fence posts, commodities that are usually cut by farmers for local use, there were about 4.6 million man-days of employment in the lumber, veneer, and other wood-using industries. Since in Georgia the harvesting, transportation, and manufacture of forest products are to a large degree part-time operations, often supplementing farming, it is difficult to translate man-days of labor required into number of people actually employed, but it is likely that at least 50,000 men found full- or part-time work in the forest and wood-products industries, not including naval stores.

Drain From the Growing Stock

Utilization Drain

THE total volume of wood removed from the sawlog-size trees of the growing stock in Georgia in 1937 for industrial and domestic use was the equivalent of 1½ billion board feet (table 26). This utilization drain also includes logs cut for mills outside the State as well as the sound, usable material included in the volume estimate but wasted in logging. The volumes removed from sound trees less than saw log size or from dead trees are not included.

Almost three-fourths of the utilization drain from the saw-timber portion of the stand came from the pines; one-fourth, from the hardwoods and cypress. All species combined, lumber represented 58 percent of the saw-timber drain; fuel wood, 18 percent; cross ties, 9 percent; veneer, 6 percent; and all other products, 9 percent.

If, on the other hand, one considers the total growing stock (i. e., all trees 5.0 inches d. b. h. and larger, saw timber, and other material combined), in 1937 the com-

modity drain for wood used in industry and for domestic purposes from this material amounted to 404 million cubic feet, inside bark, or more than 5.4 million cords of wood, bark included (table 26). These figures include the drain from saw-timber material, upper stems of saw-log-size pines, and small trees below sawlog size but at least 5.0 inches d. b. h.; they do not include, however, the drain from dead trees, cull trees, and the upper stems and limbs of sawlog-size hardwoods and cypress.

Mortality

In 1937, the mortality drain from the saw-timber component of the growing stock was 703 million board feet of pine and 159 million board feet of hardwood and cypress—a total of 862 million board feet, or about one-third of the total drain from all causes. The mortality drain from the entire growing stock, both sawlog-size and smaller trees, was about 4 million cords. More than two-thirds of this drain from saw-timber trees and nearly two-thirds of that from the whole growing stock occur in south Georgia, where the forests have long been subjected to turpentine and to widespread and repeated fires.

A certain amount of mortality from natural crowding, insects, disease, strong winds, etc., is inevitable, but a strikingly large proportion is avoidable—at least one-half of the present mortality. Uncontrolled forest fires either directly or indirectly are a leading cause of unnecessary destruction and yet could be reduced to a minimum by the institution of proper measures. The considerable losses involved in present turpentine methods can be measurably reduced by the prompt marketing of worked-out timber and by improved chipping practices. A large portion of the loss due to natural crowding can be avoided by proper thinnings and utilization of the material retained for pulpwood, fuel wood, and other uses. Where damaging insects or tree diseases are more than ordinary destruction, control measures should be undertaken. Mortality can be reduced to a considerable extent, but full attainment

TABLE 26.—Utilization drain from the sound-tree growing stock, 1937¹

Form of utilization	Saw timber			All growing-stock material	
	Pines	Hard-woods ²	Total	Inside bark	Outside bark
	M board feet	M board feet	M board feet	M cubic feet	Cords
Lumber	777,300	188,500	965,800	170,570	2,228,600
Fuel wood	241,400	54,900	296,300	139,760	1,928,200
Cross ties	74,000	77,400	151,400	26,930	351,000
Veneer	15,400	77,400	92,800	13,950	181,200
Cooperage	25,200	7,600	32,800	6,290	81,900
Poles and piles	15,300	1,000	16,300	3,930	51,300
Pulpwood	41,200	100	41,600	16,030	213,700
Fence posts	600	2,300	2,900	5,810	84,600
Miscellaneous manufactures	6,800	11,000	17,800	3,580	47,200
Land clearing	10,900	6,100	17,000	7,980	112,600
Domestic farm use	22,400	2,200	24,600	9,150	122,200
Total	1,230,500	428,800	1,659,300	403,980	5,402,500

¹ Totals for all commodities and survey units for the years 1934-37 given in table 52, appendix; detail of drain by commodities, 1937, in table 33.

² Including 80,300 M board feet of cypress.

cated will necessarily be gradual, following a considerable period of good management.

Total Drain

Analysis of the 1937 drain of 9.4 million cords from all causes (fig. 14) discloses the important point that mortality accounts for 4 million cords, or about twice that charged to lumber or to fuel wood. The fuel wood drain of almost 2 million cords is one and a half times that of all the remaining five items combined. If fuel wood were cut entirely from cull trees and the salvage of industrial operations, as could well be done, not only would the commodity drain be reduced almost 2 million cords a year, but condition of the growing stock also would be greatly improved. Pulpwood drain is small but is steadily

increasing.¹⁰ Percentage distribution of the total drain for 1937 was as follows:

	Percent
Mortality.....	43
Lumber.....	24
Fuel wood.....	21
Cross ties, poles, and piles.....	4
Veneer and cooperage.....	3
Farm use.....	2
Pulpwood.....	2
Fence posts and miscellaneous.....	1
	100

¹⁰ In 1938, with continued expansion of the pulp and paper industry in Georgia, pulpwood drain was increased to approximately 400,000 cords. A preliminary and tentative estimate of the 1939 pulpwood drain indicates that well over 500,000 cords were taken from the State by 9 mills, only two of which are located in Georgia. The indications are that the pulpwood drain for 1940 and 1941 will considerably exceed that of 1939.

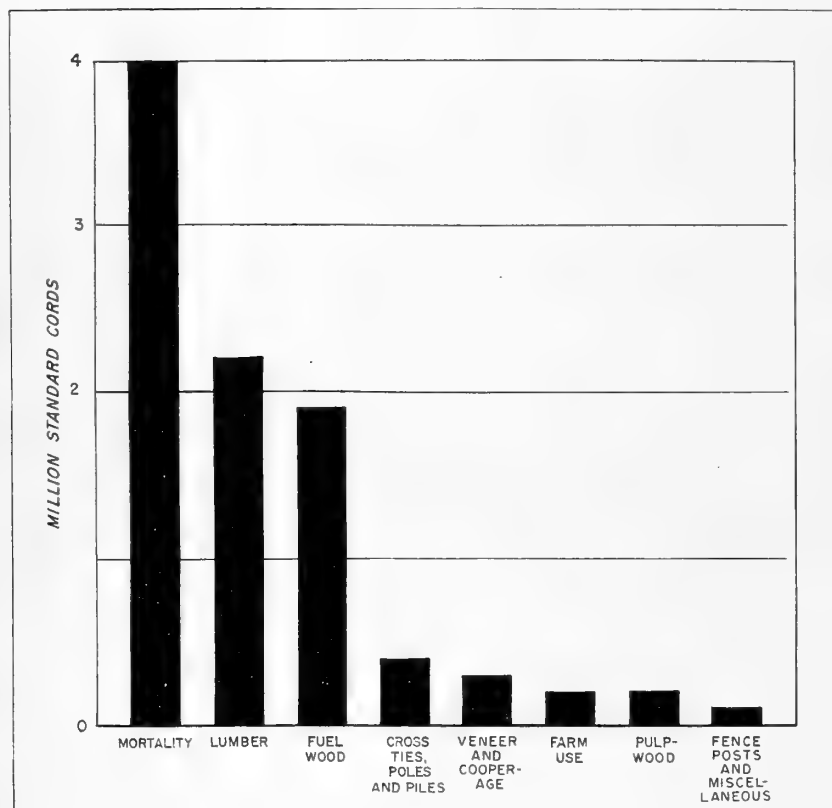


FIGURE 14.—Drain from the growing stock, including mortality, 1937 (million cords). *Farm use includes land clearing.*

The Future Timber Supply for Wood-Using Industries

Comparison of Growth and Drain

BASED on the saw-timber growing stock (pine-cypress 9.0 inches d. b. h. and larger, and hardwoods 13.0 inches d. b. h. and larger), growth for the State amounted in 1937 to 3½ billion board feet (table 27) and drain (industrial and domestic use and mortality) to 2½ billion board feet, resulting in a net increase in the growing stock of 843 million feet. A detailed statement by survey units and kind of timber for 1936-37, and in part for 1934-35, is given in table 54 in the appendix. Regarding the growth-drain situation in the saw-timber part of the stand, it must be realized that where the annual drain exceeds the growth or even where there is an apparent balance, the effect is inevitably to decrease the size and quality of the trees that compose the basic growing stock. If this concentration of lumber cut on the larger and better trees is continued long enough, it may eventually so lower the yield of sawmill material as to force many mills out of business. The deteriorating effect of the overdraft of present forest industries upon the larger and better trees is shown by the fact that while in south Georgia the saw-timber portion of the stand decreased, the total growing stock, including trees as small as 5.0 inches d. b. h., showed a surplus of growth over drain.

In 1937, on the basis of total growing stock (i. e., trees as small as 5.0 inches d. b. h., as well as those of saw-timber size), the growth for the State amounted to 930 million cubic feet, inside bark; the drain from all sources was 691 million cubic feet, leaving the growing stock increased by 239 million cubic feet (table 28). The growth and drain, expressed in standard cords, bark included, in the different survey units are shown in figure 15, and presented in detail in appendix table 55.

Notwithstanding the large amount of material that is apparently available to expand industrial activity in the near future, it would be to the lasting advantage of the

TABLE 27.—Comparison of net increment with utilization drain in saw-timber material, 1937¹

SOUTH GEORGIA UNITS			
Item	Pines	Hardwoods and cypress	All species
	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>
Growing stock, Jan. 1, 1937.....	12,632,600	5,808,500	18,441,100
Growth	981,700	255,000	1,236,700
Mortality	514,300	75,900	590,200
Net increment.....	467,400	179,100	646,500
Commodity drain.....	521,300	216,200	737,500
Net change	-53,900	-37,100	-91,000
Growing stock, Jan. 1, 1938.....	12,578,700	5,771,400	18,350,100
CENTRAL, NORTH-CENTRAL, AND NORTH GEORGIA UNITS			
Growing stock, Jan. 1, 1937.....	20,418,600	7,735,700	28,154,300
Growth	1,674,300	452,700	2,127,000
Mortality	188,700	82,700	271,400
Net increment.....	1,485,600	370,000	1,855,600
Commodity drain.....	709,200	212,600	921,800
Net change	776,400	157,400	933,800
Growing stock, Jan. 1, 1938.....	21,197,000	7,893,100	29,088,100
ALL UNITS			
Growing stock, Jan. 1, 1937.....	33,051,200	13,544,200	46,595,400
Growth	2,656,000	707,700	3,363,700
Mortality	703,000	158,600	861,600
Net increment.....	1,953,000	549,100	2,502,100
Commodity drain.....	1,230,500	428,800	1,659,300
Net change	722,500	120,300	842,800
Growing stock, Jan. 1, 1938.....	33,773,700	13,664,500	47,438,200

¹ Lumber tally. Similar figures for period from 1938, given in table 54, appendix.

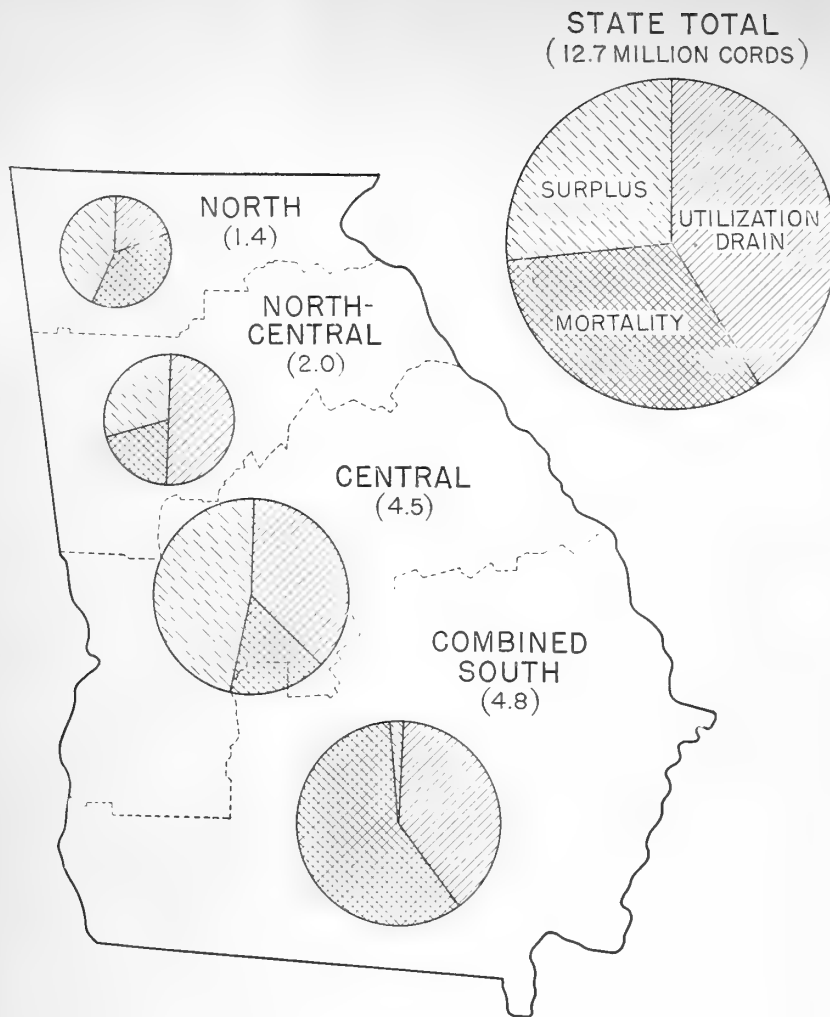


FIGURE 15.—Comparison of total growth and drain, 1937. Growth figures are given on chart in million cords. In south Georgia the areas not surveyed are excluded.

State if a considerable part of the surplus growth were left in the stands in order to build up the volume of the growing stock, increase the proportion of larger trees, and provide for greater expansion as time goes on.

With the exception of Texas, Georgia is the only one of the eight States in the lower South that added to its saw-timber growing stock in 1936.

The Situation in Different Parts of the State

In planning for the possible establishment of new industries and the expansion of the old ones, full consideration must be given to the comparison of growth and drain. The situation in one survey unit may be quite different from that in the State as a whole. For instance, in 1937 in south Georgia the saw-timber part of the growing stock was reduced 90 million board feet, but for the same year, in each of the three northern units of Georgia, there was a surplus of growth over drain, and for the five

units combined, the increase in saw-timber growing stock amounted to 843 million board feet, and in the entire growing stock, to $3\frac{1}{2}$ million cords. It is also necessary to consider the kind of drain that prevails locally. In the three northern units in 1937, more than four-fifths of the saw-timber increase was in pines; less than one-fifth, in hardwoods. Central Georgia, for all species combined, had 60 percent of the increase in saw-timber growing stock; north-central Georgia, 24 percent; and north Georgia, 16 percent.

Quality of Material

The process of gradual deterioration in the quality of the forest material should be recognized. Although in 1937 the growing stock of the State increased by about 2 percent, actually the stands suffered a net loss in quality, because of the rapid liquidation of the high-grade timber. Growth figures simply do not take into consideration this factor

TABLE 28. *Comparison of net increment with utilization drain for all growing stock material in cubic feet inside bark, 1937¹*

SOUTH GEORGIA UNITS

Item	Pines	Hardwoods and cypress	All species
	<i>M cubic feet</i>	<i>M cubic feet</i>	<i>M cubic feet</i>
Growing stock, Jan. 1, 1937	4,037,480	2,298,680	6,336,160
Growth	254,190	99,320	353,510
Mortality	150,540	37,440	187,980
Net increment	103,650	61,880	165,530
Commodity drain	118,250	37,560	155,810
Net change	-14,600	24,320	9,720
Growing stock, Jan. 1, 1938	4,022,880	2,323,000	6,345,880

CENTRAL, NORTH-CENTRAL, AND NORTH GEORGIA UNITS

Growing stock, Jan. 1, 1937	5,337,220	3,050,610	8,387,830
Growth	399,350	176,880	576,230
Mortality	56,540	42,230	98,770
Net increment	342,810	134,650	477,460
Commodity drain	180,910	67,260	248,170
Net change	161,900	67,390	229,290
Growing stock, Jan. 1, 1938	5,499,120	3,118,000	8,617,120

ALL UNITS

Growing stock, Jan. 1, 1937	9,374,700	5,349,290	14,723,990
Growth	653,540	276,200	929,740
Mortality	207,080	79,670	286,750
Net increment	446,460	196,530	642,990
Commodity drain	299,160	104,820	403,980
Net change	147,300	91,710	239,010
Growing stock, Jan. 1, 1938	9,522,000	5,441,000	14,963,000

¹ Trees 5.0 inches d. b. h. or larger. Similar figures in cords for period from date of survey to Jan. 1, 1938, given in table 55 Appendix.

of quality (table 14). In the hardwood stands, cutting takes the white oak, sweetgum, ash, and other high-priced species, and leaves the post oak, black gum, hickory, and other relatively low-priced species in possession. Then too,

it must be realized that a considerable part of the annual growth is laid down on the smaller sawlog trees or comes in by way of recruitment from the trees that each year grow into the minimum size for saw-timber classification.

Although good markets in some parts of the State and improved transportation facilities everywhere have tended to maintain the value of forest properties to a considerable extent, the forests of today in Georgia do not compare with the original old growth in volume, quality, or value. The wood-using industries that were founded on high-grade saw timber, pine and hardwood, have gradually been giving way to small sawmills and pulp mills that for the main part use trees of smaller size and poorer saw-timber quality. Only good forest management continued over a long period of time can restore the saw-timber quality that was common in the original timber in virtually all forest types.

Additional Supplies in Sight

Not all of the 1937 surplus growth of 843 million board feet of saw-timber material, or 3½ million cords of all material, should be considered available for industrial use if the growing stock is to be built up and increased in quantity and value. This is in some measure balanced by the large accumulation of usable material in cull trees, amounting to 30 million cords at the time of survey, that is not included in either growing stock or annual growth. Also, within the growing stock is almost 6 million cords of worked-out turpentine pines which, with the cull tree volume, makes up a supply of nearly 36 million cords in all, the use of even part of which would lend additional support to industrial expansion without an overdraft on the basic forest capital. To the extent that it can be used this material should be taken by industry, not only as a measure of thrift but also to relieve the drain on the sound-tree growing stock and to improve its quality and speed up growth. The industrial utilization of this great mass of wood is of such importance in the economic development of the State, as well as in the conservation of the sound-tree growing stock, that greatly increased and intensified research, designed to find profitable uses for it, is fully justified.

The Rehabilitation of Georgia's Forest Resource

THROUGHOUT its long history, Georgia has been an agricultural State, with cotton as the principal crop. For several decades now, as cotton culture has declined, its agricultural economy and traditional land use pattern have been considerably upset, and the whole State has suffered. Especially in the central and northern parts of the State, thousands of farms have been abandoned, and thousands of farm families have had to give up their efforts to make a living from the soil, the fertility of which has been depleted through erosion and one-crop agriculture. According to observations of the Forest Survey made in 1934-36, there was more than 2 million acres of idle or abandoned cropland, much of which may never be used again for agricultural crops. This serious maladjustment in land use and the growing instability in land ownership has resulted in State-wide reduction of both income and standards of living.

The decline in agriculture is also reflected in reduced opportunity for gainful employment. According to the Special Unemployment Census taken in 1937, there were more than 250,000 people on relief, or totally or partially unemployed and wanting work. To offset this decline in employment for land and people, other opportunities for both must be sought. In the main, these opportunities will be found in the utilization and processing of the natural resources of the State, among which forests and forest lands still constitute one of its greatest assets. The forests of Georgia have always occupied a greater proportion of the land surface than all the other crops and uses combined, and have played a large and important part in making the State what it is today. The rehabilitation and intensive development, utilization, and processing of this resource can go a long way in placing the economy of the State on an enduring foundation. The soils and the climate throughout the length and breadth of Georgia are favorable for the growth and development of forest stands; the native species are renowned for their vigor of growth and quick reaction to man's efforts to improve them. The nearness of the State to the great centers of population and consumption in the East and Middle West, and its ports on

the seaboard, which serve as a base for over-seas shipment, give it ample opportunity to market its forest products.

Because the forests have long been subjected to repeated burning, harsh turpentineing, and short-sighted, often premature cutting, the present stands are so poorly stocked that the annual growth of wood is less than half of what the soils are capable of producing. Frequent and indiscriminate forest burning has long been the most important factor militating against the development of well-stocked timber stands. Since early colonial days, fires have swept through the woods every few years, killing the small trees that are needed as recruits for the growing stock, and injuring or destroying many of the larger ones. In 1937, they caused a damage estimated at \$3,750,000 of which 98 percent occurred on areas not accorded organized cooperative protection under the Clarke-McNary Act; only 2 of the 12 Southern States reported greater losses. Although most of the fires in Georgia originate from carelessness, many of them are purposely and systematically set.

After many years of harvesting only the larger and more valuable trees, the stands of today are composed chiefly of small trees, 2 to 10 inches d. b. h., or in the south are full of worked-out longleaf and slash pine of small value for lumber. In upper Georgia, because of the high percentage of old-field pine stands, about half of the pine saw timber is in rough and limby trees that in the main will yield only low-grade lumber. In much of the State, the hardwood component of mixed stands is increasing because the lack of a market has left the mature trees standing. While the first and most important step in the rebuilding of Georgia forests is the control of the fire situation, the widespread application of good cutting practices and avoidance of overcutting are also essential.

Notwithstanding harsh treatment and short-sighted management, the nucleus of a good growing stock is to be found in all sections. If Georgians were satisfied to accept low returns from steadily depreciating forest stands, the present situation might not seem unduly alarming; for as shown by 1936 data, under stocked as they are, the forests still are capable of supplying on a sustained-yield

basis, with a margin to spare, the present requirements of industry. In view of what is needed in the economic rehabilitation of the State, however, the present forest situation cannot be accepted with complacency. To play its part, the forest should be developed to the fullest productivity that the soil, the species, and skillful, foresighted management can accomplish. There are strong indications that the forest lands of the State, if handled intelligently, are capable of producing at least twice the annual increment they now yield.

The forest industries rank high in the economy of the State. The survey in 1937 found a development impressive both as to size and diversification. It included 1,607 sawmills, 603 turpentine stills, 2 large new pulp and paper mills, 3 wood-distillation plants, 25 veneer mills, 36 cooperage plants, 6 wood-treating plants, and at least 63 other forest-industrial plants. There is opportunity to expand forest industry still further if it can and will use fully the kind and quality of wood available. This is particularly true in the three northern survey units, where the 1937 increment was in excess of drain by 3 million cords. There is also, in the State as a whole, an accumulation of 36 million cords of sound, usable material of comparatively low quality in cull trees and in trees worked out for turpentine, the early removal of which would be a blessing to the forest stand. To this may be added a large but undetermined volume of wood, also of low quality, in trees of small size that should be removed as thinnings from dense stands, and in the top stems and larger limbs of sawlog trees.

Although expansion of utilization, locally adjusted to sustained-yield capacity in each survey unit of the State, is both possible and desirable, perhaps the greatest good would come through a change in the pattern of the wood-using industry. For many years, the greater part of Georgia's forest resources has been converted simply into convenient shape for shipment and sold at a minimum figure for fabrication or processing elsewhere. The same material processed in Georgia for sale in finished form would bring into the State many times the present returns and give opportunity for more workers, steadier employment, and higher wages. Then too, there should be more plants to utilize the large volume of hardwoods and of sound but low-grade material in other species, most of which is now being wasted.

Only when stable, adequate, and diversified markets

are locally available for all the products of their forests, will private owners fully accept sustained-yield forest management as a sound and attractive business. South Georgia has made real progress in the last 15 years in the field of private forestry mainly because of the presence there of diversified markets for naval stores, lumber, pulpwood, poles, piles, and cross ties, and because of supplementary income from grazing and hunting preserves. In the three northern units of Georgia, on the other hand, private forestry has made but little headway, despite favorable natural conditions. The difficulty there has been that landowners have had to depend for their markets almost entirely upon the inadequate and intermittent requirements of small transient sawmills. In each of these three units, there are surpluses of growth over drain as well as noteworthy accumulations of sound material in undesirable trees, the latter crying for markets.

The forest lands of Georgia are owned by thousands of individuals with many and widely differing objects of management and an equal diversity of economic limitations. To bring about that widespread practice of essential forestry measures needed to increase materially the volume, quality, and value of the forest resource of the State, many people must participate, and many problems must be studied and solved. This is no small undertaking, nor one that can be accomplished easily in a short time; it will require years of well planned action on the part of the forest landowners themselves, with the full cooperation of public agencies and the wood-using industries.

The objectives of such an effort should be: (1) To grow on each acre of forest land, at lowest cost and in greatest volume, the most valuable commodities the soil will produce; (2) to protect forest properties and investments from preventable losses due to fire, insects, and disease; (3) to develop stable and diversified wood-using industries throughout the State that will provide profitable markets for all the products and byproducts of the forest; and (4) to remove those causes that threaten the stabilized land ownership necessary for long-time forest management, such as unfair tax treatment, discriminating freight rates, hard credit terms, and unfavorable legislation.

While the people primarily concerned in this program are the forest landowners of the State and their tenants and managers, at the same time the forest-using industries and the general public have a large stake in the program and must play their part.

Appendix

Common and Scientific Names of Species Mentioned

THROUGHOUT this publication the local or lumber-trade names for the different species have been used, rather than the recognized common names, since these names are so firmly established within the region. The following list gives the species indicated by or included under the names used in the text. Relatively scarce or unimportant species are omitted.

Lumber trade or local name	Recognized common name	Botanical name
Ash (white)	White ash	<i>Fraxinus americana</i> .
	Green ash	<i>F. pennsylvanica lanceolata</i> .
	Biltmore ash	<i>F. biltmoreana</i> .
Bay	Southern sweetbay	<i>Magnolia virginiana australis</i> .
Beech	American beech	<i>Fagus grandifolia</i> .
Cedar (eastern red cedar)	Eastern redcedar	<i>Juniperus virginiana</i> .
	Southern redcedar	<i>J. silicicola</i> .
Chestnut	Chestnut	<i>Castanea dentata</i> .
Cypress, southern	Baldcypress	<i>Taxodium distichum</i> .
	Pondcypress	<i>T. ascendens</i> .
Dogwood	Flowering dogwood	<i>Cornus florida</i> .
Elm (white)	American elm	<i>Ulmus americana</i> .
	Slippery elm	<i>U. fulva</i> .
Gum, red	Sweetgum	<i>Liquidambar styraciflua</i> .
Gum, black	Black tupelo (blackgum)	<i>Nyssa sylvatica</i> .
	Swamp tupelo (blackgum)	<i>N. biflora</i> .
Gum, tupelo	Water tupelo	<i>N. aquatica</i> .
Hackberry	Sugarberry	<i>Celtis laevigata</i> .
Hemlock	Eastern hemlock	<i>Tsuga canadensis</i> .
	Southern shagbark hickory	<i>Carya ovata pubescens</i> .
	Pignut hickory	<i>C. glabra</i> .
Hickory	Bitternut hickory	<i>C. cordiformis</i> .
	Mockernut hickory	<i>C. alba</i> .
Holly	American holly	<i>Ilex opaca</i> .
Magnolia	Southern magnolia	<i>Magnolia grandiflora</i> .
Magnolia (cucumber magnolia)	Cucumber tree	<i>M. acuminata</i> .
Maple, soft	Red maple	<i>Acer rubrum</i> .
	Silver maple	<i>A. saccharinum</i> .
Maple, hard	Sugar maple	<i>A. saccharum</i> .
	Eastern red oak	<i>Quercus borealis maxima</i> .
Oaks, red	Black oak	<i>Q. velutina</i> .
	Sargent scarlet oak	<i>Q. coccinea</i> .
	Southern red oak	<i>Q. falcata</i> .
	Swamp red oak	<i>Q. rubra pagodaefolia</i> .
	Water oak	<i>Q. nigra</i> .
	Willow oak	<i>Q. phellos</i> .
	White oak	<i>Q. alba</i> .
Oaks, white	Post oak	<i>Q. stellata</i> .
	Swamp chestnut oak	<i>Q. prinus</i> .
	Overcup oak	<i>Q. lyrata</i> .
	Chestnut oak	<i>Q. montana</i> .
Persimmon	Common persimmon	<i>Diospyros virginiana</i> .
Pine, white	Eastern white pine	<i>Pinus strobus</i> .
	Loblolly pine	<i>Pinus taeda</i> .
	Longleaf pine	<i>P. palustris</i> .
	Pitch pine	<i>P. rigida</i> .
	Pond pine	<i>P. rigida serotina</i> .
	Shortleaf pine	<i>P. echinata</i> .
	Slash pine	<i>P. caribaea</i> .
Pine, southern yellow	Spruce pine	<i>P. glabra</i> .
	Virginia pine	<i>P. virginiana</i> .
Poplar, yellow	Yellow poplar; tuliptree	<i>Liriodendron tulipifera</i> .

Definition of Terms Used

The following are brief definitions of terms used in this publication, given to facilitate an understanding of the forest situation discussed:

Land-Use Classes

Productive forest land.—Forest land that has the qualities essential for the growth of commercial timber.

Nonproductive forest land.—Forest land that does not have the qualities essential for the growth of commercial timber.

Cultivated crop land.—Land being used for the production of farm or orchard crops or that shows evidence of having been so used during the preceding 2 years.

Idle crop land.—Cultivated land that has been idle for 2 years or more but that has not reached the abandoned stage.

Abandoned crop land.—Formerly cultivated land that shows distinct signs of having been abandoned for agricultural crop production; no attempt has been made to maintain it as improved pasture.

Improved pasture.—Fenced cleared or open land, used primarily for grazing and upon which an attempt has been made to maintain a sod.

Other areas.—Areas included within the corporate limits or suburban and industrial sections of cities and communities; power, rail, and highway rights-of-way; marsh; nonmeandered waterways; and prairie.

Species Groups

Pines.—Turpentine: Slash and longleaf pines. Nonturpentine: Loblolly, shortleaf, pitch, pond, Virginia, eastern white, and spruce pines; hemlock and red cedar.

Hardwoods.—Soft-textured: Sweetgum ("red gum"), black tupelo ("blackgum"), water tupelo ("tupelo gum"), yellowpoplar, southern sweetbay ("bay"), red and silver maples ("soft maple"), southern magnolia, and associated minor species. Firm textured: Red oaks, white oaks, ash, elm, hickory, holly,¹¹ persimmon,¹¹ and associated minor species.

Cypress.—Baldecypress ("southern cypress") and pondcypress.

Forest-Type Groups

Slash-longleaf pines.—Includes the following forest types: Longleaf pine, slash-longleaf pines, slash pine, slash pine-cypress, and slash-longleaf pine-hardwoods. Over three-fourths of the net cubic-foot volume is in longleaf and slash pines.

Loblolly-shortleaf pines.—Includes the following forest types: Loblolly pine, shortleaf pine, loblolly-other pines, and shortleaf-other pines. About three-fourths of the net cubic-foot volume is in shortleaf and loblolly pines.

*Loblolly-shortleaf pine-hardwoods.*¹²—Includes the following forest types: Loblolly pine-mixed hardwoods, and shortleaf pine-mixed hardwoods. About one-half of the net cubic-foot volume is in pines; the remainder is in mixed hardwoods.

Upland hardwoods.—Includes the following forest types: Upland hardwoods, oak-chestnut, mixed oak, scrub oak, and scrub hardwoods. Over 90 percent of the net cubic-foot volume is in mixed hardwoods; scattered pines account for the remainder.

Bottom-land hardwoods.—Includes the following forest types: Cypress-tupelo gum, bottom-land hardwoods, cove-hardwoods, and yellowpoplar. Over two-thirds of the net cubic-foot volume is in red, black, and tupelo

gums, bay, cypress, red maple, and other soft-textured hardwoods; the remainder is in species such as oaks, hickories, ash, beech, elm, and hackberry, with a small amount of loblolly and spruce pine.

Cypress.—In south Georgia, the cypress types are important. In the cypress-type group, cypress makes up 46 percent of the volume; black and water tupelos ("black and tupelo gums") 40 percent; and other hardwoods include most of the remaining 14 percent.

Forest Conditions

Old-growth uncut.—Old-growth stands from which less than 10 percent of the volume has been cut.

Old-growth partly cut.—Old-growth stands from which 10 percent or more of the volume has been cut, but in which the remaining old-growth saw timber contains at least 1,000 board feet per acre of hardwood, or 600 board feet of pine or pine and hardwood mixed.

Second-growth sawlog-size uncut.—Second-growth stands from which less than 10 percent of the sawlog-size trees have been cut and in which the remaining saw timber contains at least 600 board feet per acre.

Second-growth sawlog-size partly cut.—Second-growth stands from which 10 percent or more of the sawlog-size trees have been cut, but in which the remaining saw timber contains at least 400 board feet per acre.

Second-growth under sawlog size.—Second-growth stands composed largely of under-sawlog-size trees, and containing less than 600 board feet per acre.

Reproduction.—Areas not qualifying for any of the conditions previously described, but bearing more than 80 seedlings or sprouts of commercial species less than 1 inch d. b. h. per acre.

Clear-cut.—Cut-over areas on which the young growth present is insufficient for classification as either second growth or reproduction.

Tree Classification

Sawlog-size tree.—A pine or cypress tree at least 9.0 inches d. b. h. or a hardwood tree at least 13.0 inches d. b. h., that will produce one sound butt log at least 12 feet long, or that contains at least 50 percent of its gross saw-timber volume in sound material in case the butt log is a cull.

Under-sawlog-size tree.—Any tree between 1.0 inch d. b. h. and the minimum sawlog-size tree diameter at breast height, at least 75 percent sound and with a reasonably straight stem.

Sound cull tree.—A sound tree that, because of form, crook, extreme limbliness, or other sound defect, is not, and never will become, suitable for saw timber.

Rotten cull tree.—A sawlog-size tree that is more than 50 percent defective, or an under-sawlog-size tree that is more than 25 percent defective.

Turpentine-Tree Conditions and Naval Stores Terms

Round.—Longleaf and slash pine trees that have never been worked for naval stores.

Working.—Longleaf and slash pine trees that are being worked for naval stores.

Front-faced (or front-cupped).—Longleaf and slash pine trees on which a first face is being worked.

Back-faced (or back-cupped).—Longleaf and slash pine trees on which at least one turpentine face has already been worked and another back (second, third, etc.) face is being worked.

Resting.—Previously-worked longleaf and slash pine trees resting prior to the working of back faces.

Worked out.—Longleaf and slash pine trees on which a turpentine face has been worked as the trees will stand. These trees are

¹¹Since holly and persimmon are used primarily for special purposes, such as hobbins, shuttles, and handles of sporting goods, they were not included in the saw-timber estimate.

¹²Small amounts of Virginia pine and white pine types, pure or mixed, are included in north and north-central Georgia.

purpose in the production of naval stores and are available for other uses.

Naval stores unit.—One 50-gallon cask of turpentine and $3\frac{1}{4}$ barrels of rosin (each of 500 pounds gross weight) constitute a unit.

Pine Tree Grades

Smooth tree.—A tree with at least 20 feet of clear length and at least 50 percent of the total usable length practically surface free of limbs and knots.

Limby tree.—A tree with at least 12 feet of clear length and with 30 to 49 percent of the total usable length practically free of limbs and knots.

Rough tree.—A merchantable tree not clear enough to qualify in either of the previous classes.

Miscellaneous

D. b. h. (diameter at breast height).—Diameter, outside of bark, $4\frac{1}{2}$ feet above the ground.

A 2-inch diameter class includes diameters 1 inch below and 0.9 inch above the stated midpoint; e. g., the 6-inch class includes trees 5.0 to 6.9 inches d. b. h. Corresponding limits apply to the other diameter classes.

Board feet means board-foot measure, log scale, International $\frac{1}{4}$ -inch rule, which is considered the equivalent of green lumber tally.

Supplemental Tables

TABLE 29.—Land areas of survey units in Georgia classified according to land use

Land-use class	Southeast unit—1934			Southwest unit—1934			Central unit—1936		
	Actual area	Area percent of—		Actual area	Area percent of—		Actual area	Area percent of—	
		Survey unit	Land-use class		Survey unit	Land-use class		Survey unit	Land-use class
Inventoried area:									
Forest:									
Productive.....	7,056,200	67.1	33.6	3,014,000	54.0	14.3	5,581,000	51.3	26.5
Nonproductive.....				6,400	.1	66.0	900	(1)	9.3
Total.....	7,056,200	67.1	33.5	3,020,400	54.1	14.4	5,581,900	51.3	26.5
Agricultural:									
In cultivation:									
Old cropland.....	2,043,800	19.4	17.4	2,048,200	36.7	17.4	3,990,300	36.7	34.0
New cropland.....	8,600	.1	8.0	8,800	.2	8.1	40,100	.4	37.2
Out of cultivation:									
Idle.....	135,400	1.3	11.2	207,700	3.7	17.2	391,400	3.6	32.5
Abandoned.....	123,700	1.2	12.7	95,900	1.7	9.8	405,700	3.7	41.6
Improved pasture.....	19,500	.2	2.8	63,100	1.1	9.0	214,900	2.0	30.8
Total.....	2,331,000	22.2	15.8	2,423,700	43.4	16.4	5,042,400	46.4	34.2
Other:									
Marsh.....	170,500	1.6	97.7	3,200	.1	1.8			
Rivers, lakes, etc.....	17,900	.2	16.7	20,800	.4	19.3	39,300	.4	36.6
Towns and villages.....	49,800	.5	15.0	52,700	.9	15.9	106,200	.9	32.0
Roads, railroads, etc.....	85,800	.8	22.3	65,100	1.1	16.9	107,700	1.0	27.9
Total.....	324,000	3.1	32.4	141,800	2.5	14.2	253,200	2.3	25.4
Total inventoried area.....	9,711,200	92.4	26.4	5,585,900	100.0	15.2	10,877,500	100.0	29.6
Uninventoried area:									
Forest:									
Productive (estimated) ²	299,100	2.9							
Nonproductive (estimated) ³	88,200	.8							
Total.....	387,300	3.7							
Nonforest (estimated) ⁴	409,000	3.9							
Total.....	796,300	7.6							
Aggregate area.....	10,507,500	100.0		5,585,900	100.0		10,877,500	100.0	

See footnotes at end of table.

TABLE 29.—Land areas of survey units in Georgia classified according to land use—Continued

Land-use class	North-central unit—1936			North unit—1936			All units—1934-36		
	Actual area	Area percent of—		Actual area	Area percent of—		Actual area	Area percent of—	
		Survey unit	Land-use class		Survey unit	Land-use class		Survey unit	Land-use class
Inventoried area:									
Forest:									
Productive.....	Acres	Percent	Percent	Acres	Percent	Percent	Acres	Percent	Percent
.....	2,549,000	40.2	12.1	2,835,300	66.4	13.5	21,035,500	56.0	100.0
Nonproductive.....	2,400	(1)	24.7				9,700	(1)	100.0
Total.....	2,551,400	40.2	12.1	2,835,300	66.4	13.5	21,045,200	56.0	100.0
Agricultural:									
In cultivation:									
Old cropland.....	2,744,500	43.3	23.3	932,100	21.8	7.9	11,758,900	31.2	100.0
New cropland.....	27,600	.4	25.6	22,700	.5	21.1	107,800	.3	100.0
Out of cultivation:									
Idle.....	314,100	4.9	26.1	156,400	3.7	13.0	1,205,000	3.2	100.0
Abandoned.....	264,600	4.2	27.2	84,400	2.0	8.7	974,300	2.6	100.0
Improved pasture.....	247,500	3.9	35.5	152,500	3.6	21.9	697,500	1.9	100.0
Total.....	3,598,300	56.7	24.5	1,348,100	31.6	9.1	14,743,500	39.2	100.0
Other:									
Marsh.....	800	(1)	.5				174,500	.5	100.0
Rivers, lakes, etc.....	12,200	.2	11.4	17,200	.4	16.0	107,400	.3	100.0
Towns and villages.....	97,400	1.5	29.3	25,800	.6	7.8	331,900	.9	100.0
Roads, railroads, etc.....	85,500	1.4	22.2	41,100	1.0	10.7	385,200	1.0	100.0
Total.....	195,900	3.1	19.6	84,100	2.0	8.4	999,000	2.7	100.0
Total inventoried area.....	6,345,600	100.0	17.2	4,267,500	100.0	11.6	36,787,700	97.9	100.0
Uninventoried area:									
Forest:									
Productive (estimated) ²							299,100	.8	
Nonproductive (estimated) ³							88,200	.2	
Total.....							387,300	1.0	
Nonforest (estimated) ⁴							409,000	1.1	
Total.....							796,300	2.1	
Aggregate area.....	6,345,600	100.0		4,267,500	100.0		37,584,000	100.0	

¹ Less than 0.05 percent.² Includes Okefenokee Swamp, 247,300 acres, and coastal islands, 51,800 acres.³ Includes Okefenokee Swamp, 82,400 acres, and coastal islands, 5,800 acres.⁴ Includes Okefenokee Swamp, 82,400 acres, and coastal islands, 326,600 acres.⁵ According to Census of Agriculture, 1935.

TABLE 30.—Degrees of erosion on inventoried productive forest land, cropland, and pasture, of Georgia

Land use and erosion class	Southeast unit—1934		Southwest unit—1934		Central unit—1936		North-central unit—1936		North unit—1936		All units—1934-36	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Forest:												
No erosion.....	6,967,500	98.7	2,942,100	97.6	4,860,000	87.0	1,969,900	77.3	2,588,200	91.2	19,327,700	91.9
Sheet erosion.....	55,400	.8	55,100	1.8	131,700	2.4	152,900	6.0	53,200	1.9	448,300	2.1
Shoestring erosion.....	13,200	.2	6,400	.2	211,500	3.8	153,700	6.0	30,500	1.1	415,300	2.0
Gullies.....	13,200	.2	5,600	.2	243,300	4.4	105,700	4.1	35,100	1.2	402,900	1.9
Extensive gullies.....	1,500	(1)			41,300	.7	42,400	1.7	10,200	.4	95,400	.5
Arrested erosion.....	5,400	.1	4,800	.2	93,200	1.7	124,100	4.9	118,100	4.2	345,900	1.6
Total.....	7,056,200	100.0	3,014,000	100.0	5,581,000	100.0	2,549,000	100.0	2,835,300	100.0	21,035,500	100.0
Cultivated cropland:												
No erosion.....	1,832,900	89.2	1,825,400	88.7	3,310,500	82.1	1,848,400	66.7	712,400	74.6	9,529,000	80.3
Sheet erosion.....	149,400	7.3	114,200	5.5	485,700	12.1	621,300	22.4	151,700	15.9	1,522,300	12.8
Shoestring erosion.....	50,600	2.5	26,400	1.3	194,600	4.8	191,800	6.9	46,900	4.9	510,300	4.3
Gullies.....	19,500	1.0	56,700	2.8	23,800	.6	23,600	.9	4,700	.5	128,500	1.1
Extensive gullies.....			1,600	.1	2,500	.1	3,300	.1	800	.1	8,200	.1
Arrested erosion.....			32,700	1.6	13,300	.3	83,700	3.0	38,300	4.0	168,000	1.4
Total.....	2,052,400	100.0	2,057,000	100.0	4,030,400	100.0	2,772,100	100.0	954,800	100.0	11,866,700	100.0

¹ Less than 0.05 percent.

TABLE 30.—Degrees of erosion on inventoried productive forest land, cropland, and pasture, of Georgia—Continued

Land use and erosion class	Southeast unit—1934		Southwest unit—1934		Central unit—1936		North-central unit—1936		North unit—1936		All units—1934-36	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Idle cropland:												
No erosion	117,500	86.7	176,500	84.9	305,200	78.0	150,600	47.9	104,800	67.0	854,600	71.0
Sheet erosion	9,300	6.9	15,200	7.3	52,700	13.5	89,500	28.5	31,200	20.0	197,900	16.4
Shoestring erosion	1,600	1.2	2,400	1.2	26,800	6.8	52,900	16.9	11,700	7.5	95,400	7.9
Gullies	6,200	4.6	11,200	5.4	5,900	1.5	12,200	3.9	7,100	4.5	42,600	3.5
Extensive gullies	800	.6	800	.4			1,600	.5			3,200	.3
Arrested erosion			1,600	.8	800	.2	7,300	2.3	1,600	1.0	11,300	.9
Total	135,400	100.0	207,700	100.0	391,400	100.0	314,100	100.0	156,400	100.0	1,205,000	100.0
Abandoned cropland:												
No erosion	105,100	84.9	87,900	91.6	276,100	68.1	101,400	38.3	40,600	48.1	611,100	62.7
Sheet erosion	5,400	4.4	4,800	5.0	57,200	14.1	58,400	22.1	10,200	12.1	136,000	14.0
Shoestring erosion	5,400	4.4	1,600	1.7	41,200	10.2	53,600	20.3	16,400	19.4	118,200	12.1
Gullies	3,100	2.5	1,600	1.7	24,400	6.0	35,700	13.5	10,200	12.1	75,000	7.7
Extensive gullies	800	.6			2,500	.6	4,900	1.8	1,500	1.8	9,700	1.0
Arrested erosion	3,900	3.2			4,300	1.0	10,600	4.0	5,500	6.5	24,300	2.5
Total	123,700	100.0	95,900	100.0	405,700	100.0	264,600	100.0	84,400	100.0	974,300	100.0
Pasture:												
No erosion	19,500	100.0	59,900	95.0	180,900	84.0	172,800	69.8	122,000	80.0	554,800	79.5
Sheet erosion					17,600	8.2	34,100	13.8	6,300	4.1	58,000	8.3
Shoestring erosion					10,100	4.7	20,300	8.2	10,200	6.7	40,600	5.8
Gullies			1,600	2.5	5,000	2.3	11,400	4.6	6,200	4.1	24,200	3.5
Extensive gullies					800	.4	1,600	.6	800	.5	3,200	.5
Arrested erosion			1,600	2.5	800	.4	7,300	3.0	7,000	4.6	16,700	2.4
Total	19,500	100.0	63,100	100.0	214,900	100.0	247,500	100.0	152,500	100.0	697,500	100.0
Total forest, cropland, and pasture:												
No erosion	9,042,500	96.4	5,091,800	93.7	8,932,400	84.1	4,243,100	69.0	3,568,000	85.3	30,877,800	86.3
Sheet erosion	219,500	2.3	189,300	3.5	744,900	7.0	956,200	15.5	252,600	6.0	2,362,500	6.6
Shoestring erosion	70,800	.8	36,800	.7	484,200	4.6	472,300	7.7	115,700	2.8	1,179,800	3.3
Gullies	42,000	.4	76,700	1.4	302,400	2.8	188,600	3.1	63,300	1.5	673,000	1.9
Extensive gullies	3,160	(1)	2,400	(1)	47,100	.4	53,800	.9	13,300	.3	119,700	.3
Arrested erosion	9,360	.1	40,700	.7	112,400	1.1	233,300	3.8	170,500	4.1	566,200	1.6
Total	9,387,200	100.0	5,437,700	100.0	10,623,400	100.0	6,147,300	100.0	4,183,400	100.0	35,779,000	100.0

(1) Less than 0.05 percent.

TABLE 31.—Productive forest areas of Georgia,¹ in the various forest types

Forest type	Southeast unit—1934		Southwest unit—1934		Central unit—1936		North-central unit—1936		North unit—1936		All units—1934-36	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Longleaf and slash pines:												
Longleaf pine	1,990,900	28.2	1,136,800	37.7	294,400	5.2	32,500	1.3			3,454,600	16.5
Longleaf-slash pine	637,400	9.0	200,500	6.7							837,900	4.0
Longleaf-other pines					76,900	1.4	16,200	.6			93,100	.4
Slash pine	1,635,300	23.2	647,000	21.4	38,500	.7					2,320,800	11.1
Slash pine-cypress	428,900	6.1	50,400	1.7							479,300	2.3
Slash-other pines					10,000	.2					10,000	(2)
Turpentine pine-hardwoods	368,100	5.2	80,700	2.7							448,800	2.1
Longleaf pine-hardwoods					43,500	.8	24,300	1.0			67,800	.3
Slash pine-hardwoods					4,200	.1					4,200	(2)
Total	5,060,600	71.7	2,115,400	70.2	467,500	8.4	73,000	2.9			7,716,500	36.7
Shortleaf, loblolly, and other pines:												
Nonturpentine pines	593,100	8.4	334,700	11.1							927,800	4.4
Shortleaf pine					378,900	6.8	499,100	19.6	558,300	19.7	1,436,300	6.8
Shortleaf-other pines					302,800	5.4	151,800	5.9	129,000	4.5	583,600	2.8
loblolly pine					1,566,500	28.0	569,700	22.3	136,100	4.8	2,272,300	10.8
loblolly-other pines					516,900	9.3	211,800	8.3	92,300	3.3	821,000	3.9
Virginia pine							9,700	.4	91,500	3.2	101,200	.5
Virginia-other pines							2,400	.1	61,800	2.2	64,200	.3
White pine									13,300	.5	13,300	.1
White-other pines									10,900	.4	10,900	.1
Scrub pine	1,600	(2)									1,600	(2)
Cedar							1,600	.1			1,600	(2)
Hemlock									3,900	.1	3,900	(2)
Total	594,700	8.4	334,700	11.1	2,765,100	49.5	1,446,100	56.7	1,097,100	38.7	6,237,700	29.7

See footnotes at end of table.

TABLE 31.—*Productive forest areas of Georgia,¹ in the various forest types—Continued*

Forest type	Southeast unit— 1934		Southwest unit— 1934		Central unit— 1936		North-central unit—1936		North unit— 1936		All units— 1934-36	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Shortleaf-loblolly pine-hardwood:												
Nonturpentine pine-hardwoods	368,100	5.2	114,200	3.8							482,300	2.7
Shortleaf pine-hardwoods					257,600	4.6	284,900	11.2	452,000	16.0	994,500	4.7
Loblolly pine-hardwoods					786,100	14.1	228,900	9.0	69,100	3.1	1,104,100	5.3
Virginia pine-hardwoods							2,400	.1	90,700	3.2	93,100	.4
White pine-hardwoods									34,400	1.2	34,400	.2
Total	368,100	5.2	114,200	3.8	1,043,700	18.7	516,200	20.3	666,200	23.5	2,708,000	12.6
Upland hardwoods:												
Upland hardwoods	21,000	.3	49,500	1.6	497,600	8.9	341,600	13.4			909,700	4.3
Oak-chestnut									323,700	11.4	323,700	1.5
Mixed oak									628,600	22.2	628,600	2.9
Scrub hardwoods	163,400	2.3	114,900	3.8	149,700	2.7	11,100	.4	21,900	.8	461,300	2.2
Total	184,400	2.6	164,400	5.4	647,300	11.6	353,000	13.8	974,200	34.4	2,323,300	11.0
Bottomland hardwoods:												
Bottomland and swamp hardwoods	660,800	9.4	217,400	7.2	610,600	11.0	159,100	6.2			1,647,900	7.8
Cypress-hardwoods	187,600	2.7	67,900	2.3	46,800	.8	1,600	.1			303,900	1.4
Stream-margin hardwoods									23,500	.8	23,500	.1
Cove hardwoods									54,000	1.9	54,000	.3
Yellow poplar									20,300	.7	20,300	.1
Total	848,400	12.1	285,300	9.5	657,400	11.8	160,700	6.3	97,800	3.4	2,049,600	9.7
Total productive forest area	7,056,200	100.0	3,014,000	100.0	5,581,000	100.0	2,549,000	100.0	2,835,300	100.0	21,035,500	100.0

¹ Excluding 299,100 acres uninventoried.² Less than 0.05 percent.TABLE 32.—*Areas of productive forest-type groups¹ in the various topographic situations*

Survey unit and forest-type group	Rolling upland ²		Flatwoods		Swamps, bays, ponds, branch heads		River bottoms		All situations	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Southeast:										
Turpentine pine	1,490,500	29.4	2,473,500	48.9	1,081,800	21.4	14,800	0.3	5,060,600	100.0
Nonturpentine pine	173,600	18.0	379,100	39.4	315,200	32.7	94,900	9.9	962,800	100.0
Hardwood	145,500	17.2	49,000	5.8	432,700	51.2	218,000	25.8	845,200	100.0
Cypress			3,900	2.1	156,500	83.4	27,200	14.5	187,600	100.0
Total	1,809,600	25.6	2,905,500	41.2	1,986,200	28.2	354,900	5.0	7,056,200	100.0
Southwest:										
Turpentine pine	1,344,500	63.6	419,400	19.8	337,100	15.9	14,400	.7	2,115,400	100.0
Nonturpentine pine	291,700	65.0	44,700	10.0	92,600	20.6	19,900	4.4	448,900	100.0
Hardwood	157,200	41.2	3,200	.8	176,600	46.3	44,800	11.7	381,800	100.0
Cypress			800	1.2	65,500	96.4	1,600	2.4	67,900	100.0
Total	1,793,400	59.5	468,100	15.5	671,800	22.3	80,700	2.7	3,014,000	100.0
Central:										
Pine	3,069,500	96.4			96,200	3.0	19,200	.6	3,184,900	100.0
Pine-hardwood	940,000	86.1			111,200	10.2	40,200	3.7	1,091,400	100.0
Upland hardwood	647,300	100.0							647,300	100.0
Bottomland hardwood					436,600	66.4	220,800	33.6	657,400	100.0
Total	4,656,800	83.5			644,000	11.5	280,200	5.0	5,581,000	100.0
North-central:										
Pine	1,474,500	98.7			13,800	.9	6,500	.4	1,494,800	100.0
Pine-hardwood	513,700	95.1			24,400	4.5	2,400	.4	540,500	100.0
Upland hardwood	353,000	100.0							353,000	100.0
Bottomland hardwood					135,500	84.3	25,200	15.7	160,700	100.0
Total	2,341,200	91.9			173,700	6.8	34,100	1.3	2,549,000	100.0
North:										
Pine	1,088,500	99.2					8,600	.8	1,097,100	100.0
Pine-hardwood	659,200	98.9					7,000	1.1	666,200	100.0
Upland hardwood	974,200	100.0							974,200	100.0
Bottomland hardwood	81,300	83.1					16,500	16.9	97,800	100.0
Total	2,803,200	98.0					32,100	1.1	2,835,300	100.0
All units	13,404,200	63.8	3,373,600	16.0	3,475,700	16.5	782,000	3.7	21,035,500	100.0

¹ Includes only inventoried productive forest areas.² Includes 2,802,500 acres classified as slopes in north Georgia.

TABLE 33.—Productive forest areas of Georgia survey units, distributed by forest-type group and forest condition¹

LONGLeAF AND SLASH PINES

Forest-type group and condition	Southeast unit—1934						Southwest unit—1934						Central unit—1936						North-central unit—1936						North unit—1936						All units—1934-36					
	Area percent of—			Area percent of—			Area percent of—			Area percent of—			Area percent of—			Area percent of—			Area percent of—			Area percent of—			Area percent of—			Area percent of—								
	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition	Actual area	Type group	Forest condition						
Old growth:																																				
Uncut.....	105,100	2.1	76.9	20,800	1.0	15.2	8,400	1.8	6.1	2,400	3.3	1.8																								
Partly cut.....	420,300	8.3	58.9	245,300	11.6	34.4	35,100	7.5	4.9	13,000	17.8	1.8																								
Total.....	525,400	10.4	61.8	266,100	12.6	31.3	43,500	9.3	5.1	15,400	21.1	1.8																								
Second growth:																																				
Sawlog size:																																				
Uncut.....	1,461,600	28.8	67.1	579,900	27.4	26.6	118,800	25.5	5.4	19,500	26.7	.9																								
Partly cut.....	192,300	3.8	53.9	87,800	4.2	24.6	66,900	14.3	18.8	9,700	13.3	2.7																								
Under sawlog size	2,015,100	39.8	67.0	815,700	38.5	27.2	146,300	31.3	4.9	26,800	36.7	.9																								
Reproduction.....	418,000	8.3	72.5	131,900	6.2	22.9	25,900	5.5	4.5	800	1.1	.1																								
	4,087,000	80.7	66.8	1,615,300	76.3	26.4	357,900	76.6	5.9	56,800	77.8	.9																								
Clear-cut.....	448,200	8.9	59.9	234,000	11.1	31.2	66,100	14.1	8.8	800	1.1	.1																								
All conditions.....	5,060,600	100.0	65.6	2,115,400	100.0	27.4	467,500	100.0	6.1	73,000	100.0	.9																								

SHORTLEAF, LOBLOLLY, AND OTHER PINES

Old growth:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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SHORTLEAF-LOBLOLLY-HARDWOODS

Old growth:																		
Uncut.....	35,000	9.5	34.1	13,500	11.8	13.2	23,400	2.2	22.8	7,300	1.4	7.1	23,400	3.5	22.8	102,600	3.8	100.0
Partly cut.....	46,700	12.7	33.7	19,900	17.4	14.3	45,200	4.4	32.6	6,500	1.3	4.7	20,400	3.1	14.7	138,700	5.1	100.0
Total.....	81,700	22.2	33.9	33,400	29.2	13.8	68,600	6.6	28.4	13,800	2.7	5.7	43,800	6.6	18.2	241,300	8.9	100.0
Second growth:																		
Sawlog size:																		
Uncut.....	118,300	32.2	18.0	32,800	28.8	5.0	194,000	18.6	29.6	118,400	22.9	18.1	192,400	28.9	29.3	655,900	24.2	100.0
Partly cut.....	56,000	15.2	11.5	10,400	9.1	2.1	264,200	25.3	54.3	85,300	16.5	17.5	71,100	10.7	14.6	487,000	18.0	100.0
Under sawlog size	82,500	22.4	7.2	31,200	27.3	2.7	432,400	41.4	37.9	265,400	51.4	23.2	331,600	49.7	29.0	1,143,100	42.2	100.0
Reproduction.....	28,000	7.6	16.1	4,800	4.2	2.8	82,000	7.9	47.2	33,300	6.5	19.1	25,800	3.9	14.8	173,900	6.4	100.0
Total.....	284,800	77.4	11.6	79,200	69.4	3.2	972,600	93.2	39.6	502,400	97.3	20.4	620,900	93.2	25.2	2,459,900	90.8	100.0
Clear-cut.....	1,600	.4	22.2	1,600	1.4	22.2	2,500	.2	34.8				1,500	.2	20.8	7,200	.3	100.0
All conditions.....	368,100	100.0	13.6	114,200	100.0	4.2	1,043,700	100.0	38.5	516,200	100.0	19.1	666,200	100.0	24.6	2,708,400	100.0	100.0

¹ Does not include 299,100 acres of uninventoried forest land estimated as productive.

TABLE 33.—Productive forest areas of Georgia survey units, distributed by forest-type group and forest condition—Continued

UPLAND HARDWOODS

Forest-type group and condition	Southeast unit—1934						Southwest unit—1934						Central unit—1936						North-central unit—1936						North unit—1936						All units—1934-36					
	Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—			Area per- cent of—								
	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition	Actual area	Type group	For- est con- dition						
Old growth:	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Acres</i>	<i>Pct.</i>	<i>Pct.</i>						
Uncut.....	2,300	1.3	1.1	7,200	4.4	3.5	56,800	8.8	27.7	16,200	4.6	7.9	122,700	12.6	59.8	205,200	8.9	100.0																		
Partly cut.....	800	.4	.5	11,200	6.8	7.0	26,800	4.1	16.9	37,400	10.6	23.5	82,900	8.5	52.1	159,100	6.8	100.0																		
Total.....	3,100	1.7	.9	18,400	11.2	5.1	83,600	12.9	22.9	53,600	15.2	14.7	205,600	21.1	56.4	364,300	15.7	100.0																		
Second growth:																																				
Sawlog size:																																				
Uncut.....	15,600	8.4	2.9	9,500	5.8	1.8	135,500	20.9	25.2	76,300	21.6	14.2	301,000	30.9	55.9	537,900	23.2	100.0																		
Partly cut.....	3,100	1.7	1.4	4,800	2.9	2.2	71,900	11.1	33.2	63,300	17.9	29.2	73,500	7.5	34.0	216,600	9.3	100.0																		
Under sawlog size.....	147,000	79.7	13.2	119,700	72.8	10.7	317,800	49.1	28.5	148,400	42.1	13.3	381,600	39.2	34.3	1,114,500	47.9	100.0																		
Reproduction.....	14,000	7.6	16.7	10,400	6.3	12.5	36,800	5.7	44.0	11,400	3.2	13.7	10,900	1.1	13.1	83,500	3.6	100.0																		
Total.....	179,700	97.4	9.2	144,400	87.8	7.4	562,000	86.8	28.8	299,400	84.8	15.3	767,000	78.7	39.3	1,952,500	84.0	100.0																		
Clear-cut.....	1,600	.9	24.6	1,600	1.0	24.6	1,700	.3	26.2				1,600	.2	24.6	6,500	.3	100.0																		
All conditions.....	184,400	100.0	7.9	146,000	100.0	7.1	647,300	100.0	27.9	353,000	100.0	15.2	974,200	100.0	41.9	2,323,300	100.0	100.0																		

BOTTOM LAND HARDWOODS

Old growth:																																				
Uncut.....	228,800	27.0	58.8	39,200	13.7	10.1	91,200	13.9	23.5	13,800	8.6	3.6	15,700	16.0	4.0	388,700	19.0	100.0																		
Partly cut.....	175,100	20.6	45.1	98,300	34.5	25.3	95,300	14.5	24.5	8,100	5.0	2.1	11,700	12.0	3.0	388,500	18.9	100.0																		
Total.....	403,900	47.6	52.0	137,500	48.2	17.7	186,500	28.4	24.0	21,900	13.6	2.8	27,400	28.0	3.6	777,200	37.9	100.0																		
Second growth:																																				
Sawlog size:																																				
Uncut.....	220,300	26.0	40.6	51,200	18.0	9.4	186,500	28.4	34.4	54,400	33.9	10.0	30,500	31.2	5.6	542,900	26.5	100.0																		
Partly cut.....	35,000	4.1	18.9	10,400	3.6	5.6	123,800	18.8	66.9	6,500	4.0	3.5	9,400	9.6	5.1	185,100	9.0	100.0																		
Under sawlog size.....	154,100	18.2	32.1	68,600	24.0	14.3	151,400	23.0	31.5	75,500	47.0	15.7	30,500	31.2	6.4	480,100	23.5	100.0																		
Reproduction.....	28,800	3.4	62.7	8,800	3.1	19.2	5,900	.9	12.9	2,400	1.5	5.2				45,900	2.2	100.0																		
Total.....	438,200	51.7	34.9	139,000	48.7	11.1	467,600	71.1	37.3	138,800	86.4	11.1	70,400	72.0	5.6	1,264,000	61.2	100.0																		
Clear-cut.....	6,300	.7	34.2	8,800	3.1	47.9	3,300	.5	17.9							18,400	.9	100.0																		
All conditions.....	848,400	100.0	41.4	285,300	100.0	13.9	657,400	100.0	32.1	160,700	100.0	7.8	97,800	100.0	4.8	2,049,600	100.0	100.0																		

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TABLE 34.—*Sound trees on productive forest land, by diameter class*

[Thousand trees; 1. e., 000 omitted]

Survey unit and date and diameter class (inches)	Pines						Hardwoods			Cypress	Total all species
	Longleaf	Slash	Loblolly	Shortleaf	Other	Total	Soft- textured	Firm- textured	Total		
Southeast (1934):											
2	58,747	189,378	28,268	162	11,544	288,099	290,497	95,264	385,761	57,813	731,673
4	32,720	86,019	13,449	108	7,675	139,971	98,504	31,972	130,476	23,879	294,326
6	23,638	49,439	7,814	68	4,820	85,179	51,712	13,012	64,724	13,667	163,570
8	21,575	43,028	6,478	53	3,739	74,873	30,947	6,817	37,764	8,658	121,295
10	13,048	21,957	4,564	41	2,891	42,501	17,777	4,732	22,509	5,492	70,502
12	8,328	13,113	3,689	35	2,518	27,683	12,105	3,380	15,485	3,406	46,574
14	3,982	6,585	2,503	20	1,453	14,543	6,700	2,123	8,823	1,394	24,760
16	1,488	2,889	1,734	11	780	6,902	3,985	1,404	5,389	526	12,817
18	560	1,072	1,096	5	381	3,114	2,423	1,051	3,474	224	6,812
20	149	414	489	2	172	1,226	1,291	627	1,918	137	3,281
22	87	181	280	1	102	651	722	458	1,180	93	1,924
24	31	124	194		34	383	398	318	716	59	1,158
26	16	65	62		22	165	228	177	405	31	601
28	6	31	38		3	78	117	129	246	22	346
30+		18	56		3	77	240	221	461	66	604
Total	163,775	414,313	70,714	506	36,137	685,445	517,646	161,685	679,331	115,467	1,480,243
Southwest (1934):											
2	35,469	34,190	16,520	515	1,978	88,672	57,358	28,693	86,051	10,193	184,916
4	16,329	20,290	8,915	435	1,674	47,643	16,680	7,125	23,805	5,145	76,593
6	12,398	14,827	5,208	304	1,166	33,903	11,471	3,803	15,274	3,515	52,692
8	11,334	12,382	3,754	169	649	28,288	5,049	2,077	7,126	1,991	37,405
10	7,333	7,350	2,517	177	680	18,057	3,355	1,215	4,570	1,348	23,975
12	4,710	4,774	1,843	134	515	11,976	2,738	924	3,662	703	16,341
14	2,505	2,655	1,256	79	301	6,796	1,857	607	2,464	278	9,538
16	971	1,189	777	48	185	3,170	1,096	431	1,527	147	4,844
18	396	463	447	20	76	1,402	508	291	799	45	2,246
20	99	179	272	14	53	617	278	185	463	26	1,106
22	32	109	128	5	17	291	172	90	262	41	594
24	13	29	99	4	15	160	86	45	131	22	313
26	3	26	64	3	13	109	48	22	70	6	185
28	3	9	36	1	5	54	13	19	32		86
30+	3	6	29			38	40	34	74		112
Total	91,598	98,478	41,865	1,908	7,327	241,176	100,749	45,561	146,310	23,460	410,946
Central (1936):											
2	9,134	2,609	201,998	116,991	3,311	334,043	255,926	320,192	576,118	2,576	912,737
4	4,951	1,037	107,020	59,415	1,573	173,996	65,447	62,794	128,241	1,171	303,408
6	3,479	368	57,106	31,046	703	92,702	34,759	23,653	58,412	903	152,017
8	3,145	388	36,901	17,760	378	58,572	22,749	11,174	33,923	636	93,131
10	2,315	351	22,334	10,806	274	36,080	15,021	7,427	22,448	328	58,856
12	1,599	378	14,626	5,797	228	22,628	10,649	4,720	15,369	261	38,258
14	940	241	8,293	2,660	214	12,348	6,872	3,091	9,963	130	22,441
16	475	124	4,560	1,101	103	6,363	4,262	2,138	6,400	97	12,860
18	224	34	2,686	438	104	3,486	2,482	1,328	3,810	64	7,360
20	87	17	1,689	134	50	1,977	1,335	960	2,295	30	4,302
22	74	3	760	50	30	917	646	542	1,188	20	2,125
24	16		439	27	23	505	408	331	739	17	1,261
26	7		241	6	20	274	251	241	492		766
28	20		134		7	161	107	100	207	10	378
30+			87		17	104	103	154	257		361
Total	26,466	5,550	458,874	246,231	7,035	744,156	421,017	438,845	859,862	6,243	1,610,261

¹ Negligible.

TABLE 34.—Sound trees on productive forest land, by diameter class Continued

[Thousand trees; i. e., 000 omitted]

Survey unit and date and diameter class (inches)	Pines						Hardwoods			Cypres	Total all species
	Longleaf	Slash	Loblolly	Shortleaf	Other	Total	Soft- textured	Firm- textured	Total		
North-central (1936):											
2	844		99,785	124,259	2,597	227,485	77,159	190,188	267,347		494,832
4	974		49,276	56,969	1,298	108,517	18,697	42,037	60,734		169,251
6	520		26,520	29,864	519	57,423	8,472	16,133	24,605		82,028
8	454		12,809	15,136	426	28,825	4,969	8,310	13,309		42,134
10	344		6,437	9,897	361	17,039	3,376	5,778	9,154		26,193
12	308		4,015	5,476	179	9,978	2,409	3,145	5,554		15,532
14	166		2,687	2,740	71	5,664	1,390	1,980	3,369		9,024
16	140		1,708	1,003	19	2,870	990	1,240	2,230		5,060
18	36		1,048	448	3	1,555	630	71	1,441		2,876
20	26		578	143	6	753	344	344	685		1,438
22	16		328	59		403	227	185	412		815
24	3		146	10		159	130	68	198		357
26	3		72	7		82	68	45	113		195
28	3		33	3		39	33	16	49		88
30+			32			32	36	25	59		91
Total	3,837		205,474	246,014	5,479	460,804	118,940	270,200	389,140		849,944
North (1936):											
2	1,470		18,267	77,380	31,778	128,895	42,569	197,269	239,868	219	368,882
4	156		8,946	39,409	12,230	60,741	11,384	67,185	78,569	63	139,575
6	63		5,098	26,148	6,193	37,502	5,348	32,816	38,168		75,660
8	3		3,312	16,715	3,747	23,777	2,521	18,880	21,401	3	45,181
10	16		2,380	10,722	2,709	15,827	1,558	12,129	13,687	3	29,517
12	6		1,411	5,909	1,829	9,155	1,085	7,473	8,558	6	17,719
14	16		894	2,318	835	4,063	767	4,425	5,192		9,256
16	16		466	844	444	1,770	382	2,415	2,797	3	4,570
18	9		304	310	212	835	253	1,401	1,654		2,489
20	9		166	144	94	413	129	767	920		1,339
22			50	69	60	179	88	409	497		676
24			25	37	19	81	75	188	263		344
26			9	13	44	66	28	91	119		185
28	3		3	13	31	50	18	66	84		134
30+			3		34	37	22	75	97		134
Total	1,767		41,334	180,031	60,259	283,391	66,227	345,643	411,870	257	695,558
All units (1934-36):											
2	105,664	226,177	364,838	319,307	51,208	1,067,194	723,509	831,636	1,555,145	70,801	2,693,140
4	55,130	107,346	187,606	156,336	24,450	530,868	210,712	211,113	421,825	30,258	982,651
6	39,498	64,634	101,746	87,430	13,401	306,709	111,762	89,411	201,173	18,085	527,967
8	36,511	55,798	63,254	49,833	8,939	214,335	66,265	47,258	113,523	11,288	339,146
10	23,056	29,658	38,232	31,643	6,915	129,504	41,087	31,281	72,368	7,171	209,043
12	14,951	18,265	25,584	17,351	5,269	81,420	28,986	19,642	48,628	4,376	134,424
14	7,609	9,481	15,633	7,817	2,874	43,414	17,576	12,226	29,802	1,802	71,088
16	3,090	4,202	9,245	3,067	1,531	21,075	10,705	7,628	18,333	775	40,181
18	1,225	1,569	5,581	1,221	776	10,372	6,296	4,782	11,078		21,788
20	370	610	3,194	437	375	4,986	3,377	2,910	6,287	363	11,466
22	209	293	1,546	181	209	2,441	1,855	1,684	3,539	154	6,143
24	63	153	963	78	91	1,288	1,097	950	2,047	98	3,443
26	29	91	448	29	99	696	623	576	1,199	37	1,462
28	35	40	244	17	46	382	288	330	618	32	1,062
30+	3	24	207		54	288	441	507	948	60	1,062
Total	287,143	518,341	818,261	674,690	116,237	2,414,972	1,224,579	1,261,934	2,486,513	47,667	5,000,000

TABLE 35.—Turpentine-pine stand and tree conditions in south Georgia, 1934

Survey unit and crop history	Tree history				Total	
	Round ¹	Working	Resting	Worked out		
Southeast:	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>	<i>Percent</i>
Working:						
Front-faced.....	3,375	5,604	405	168	9,552	6.9
Back-faced.....	17,413	45,883	5,213	7,629	76,138	55.0
Total.....	20,788	51,487	5,618	7,797	85,690	61.9
Resting and worked out.....	15,568		13,933	7,916	37,417	27.1
Round.....	14,651		373	190	15,214	11.0
Total.....	51,007	51,487	19,924	15,903	138,321	
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>		
	36.9	37.2	14.4	11.5		100.0
Southwest:	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>		
Working:						
Front-faced.....	2,556	3,249	214	96	6,115	10.9
Back-faced.....	4,586	10,446	1,074	2,405	18,511	32.8
Total.....	7,142	13,695	1,288	2,501	24,626	43.7
Resting and worked out.....	7,870		6,891	5,146	19,907	35.4
Round.....	11,398		293	65	11,756	20.9
Total.....	26,410	13,695	8,472	7,712	56,289	
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>		
	46.9	24.3	15.1	13.7		100.0
Total:	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>	<i>M trees</i>		
Working:						
Front-faced.....	5,931	8,853	619	264	15,667	8.0
Back-faced.....	21,999	56,329	6,287	10,034	94,649	48.6
Total.....	27,930	65,182	6,906	10,298	110,316	56.6
Resting and worked out.....	23,438		20,824	13,062	57,324	29.5
Round.....	26,049		666	255	26,970	13.9
Total.....	77,417	65,182	28,396	23,615	194,610	
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>		
	39.8	33.5	14.6	12.1		100.0

¹ Seven inches or larger, as of Apr. 1, 1934.

TABLE 36.—Increase in round longleaf and slash pines in south Georgia from 1934 to 1938

Item	7.0 inches and larger		9.0 inches and larger	
	Total	Annual average	Total	Annual average
Round trees Jan. 1, 1934.....	<i>M trees</i> 83,511	<i>M trees</i>	<i>M trees</i> 27,895	<i>M trees</i>
Increase due to growth of smaller trees.....	46,172	11,543	28,224	7,056
Decrease due to mortality.....	7,785	1,946	3,039	760
Net increase from natural causes.....	38,387	9,597	25,185	6,296
Taken into turpentine.....	18,886	4,722	10,279	2,570
Cut for wood products.....	1,188	297	951	238
Total industrial drain.....	20,074	5,019	11,230	2,808
Net change during 4-year period.....	+18,313	+4,578	+13,955	3,488
Round trees Jan. 1, 1938.....	101,824		41,850	
Ratio of Jan. 1, 1938 to Jan. 1, 1934.....	1.219		1.500	

TABLE 37.—Area of longleaf pine stump land and volume of stump wood,¹ classified according to stump tonnage per acre

Survey unit and date	Stumps per acre				Total	
	5 or less	6-13	14-25	26 or more		
	Acres	Acres	Acres	Acres	Acres	Percent
	Percent	Percent	Percent	Percent		
Southeast (1934)	370,700	479,800	422,000	327,200	1,599,700	65.8
Southwest (1934)	247,900	216,800	160,000	168,800	793,500	31.6
Central (1936)	34,000	41,900	21,200	5,000	102,100	4.1
North central (1936)	6,500	4,100	1,600		12,200	.5
All units	659,100	741,800	604,800	401,000	2,406,700	100.0
	Percent	Percent	Percent	Percent		
	26.3	29.6	24.2	16.9		

Survey unit and date	Stumps per acre				Total	
	5 or less	6-13	14-25	26 or more		
	Tons	Tons	Tons	Tons	Tons	Percent
	Percent	Percent	Percent	Percent		
Southeast (1934)	148,000	964,000	1,632,000	2,437,000	5,181,000	65.2
Southwest (1934)	99,000	432,000	643,000	1,269,000	2,443,000	30.8
Central (1936)	14,000	84,000	87,000	17,000	202,000	2.5
North central (1936)	3,000	8,000	6,000		17,000	.2
All units	264,000	1,488,000	2,428,000	3,713,000	7,913,000	100.0
	Percent	Percent	Percent	Percent		
	3.3	18.7	30.7	47.3		

¹ Blasting basis; 1934-36.TABLE 38.—Net board-foot volume on productive forest land of Georgia, expressed by Doyle and Scribner log rules and lumber tally,¹ 1934-56

Species group	Log rule		
	Doyle	Scribner	Lumber tally
Pines:	M board feet	M board feet	M board feet
Longleaf	2,066,800	3,217,500	3,861,100
Slash	2,767,000	4,429,200	5,317,200
Shortleaf	3,488,300	5,535,400	6,611,500
Loblolly	8,953,300	12,699,900	14,717,200
Others	1,041,100	1,525,200	1,763,400
Total	18,256,500	27,407,200	32,270,400
Hardwoods:			
Red gum	1,785,600	2,193,100	2,409,500
Black and tupelo gums	1,739,700	2,213,000	2,523,000
Other soft-textured	1,805,900	2,305,200	2,595,000
Red oaks	1,814,600	2,223,000	2,427,500
White oaks	939,100	1,136,900	1,277,000
Other firm-textured	870,400	1,117,800	1,287,500
Total	8,965,300	11,189,000	12,539,500
Cypress	610,700	933,000	1,128,000
All species	27,822,500	39,529,200	45,738,900

¹ Based on International 1/4-inch rule.

Table 39.—Net board-foot volume (lumber tally ¹), by principal tree-species group

Tree-species group	Southeast unit—1934			Southwest unit—1934			Central unit—1936		
	Volume	Volume percent of—		Volume	Volume percent of—		Volume	Volume percent of—	
		Survey unit	Species group		Survey unit	Species group		Survey unit	Species group
Pines:	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>
Longleaf.....	1,842,400	13.7	47.7	1,155,200	22.6	29.9	689,300	4.4	17.9
Slash.....	3,704,400	27.7	69.7	1,493,600	29.1	28.1	119,200	.8	2.2
Shortleaf.....	7,300	.1	.1	53,100	1.0	.8	2,153,400	13.8	32.6
Loblolly.....	2,273,000	17.0	15.4	1,161,200	22.7	7.9	7,954,400	51.2	54.1
Others.....	726,100	5.4	41.2	159,300	3.1	9.0	120,100	.8	6.8
Total.....	8,553,200	63.9	26.5	4,022,400	78.5	12.5	11,036,400	71.0	34.2
Hardwoods:									
Red gum.....	953,400	7.1	39.6	150,800	2.9	6.3	1,087,300	7.0	45.1
Black and tupelo gums.....	1,185,200	8.9	47.0	249,400	4.9	9.9	929,700	6.0	36.8
Other soft-textured.....	626,300	4.7	24.4	235,400	4.6	9.2	986,400	6.3	38.5
Red oaks.....	701,600	5.2	28.9	163,600	3.2	6.7	654,800	4.2	27.0
White oaks.....	241,700	1.8	19.5	50,900	1.0	4.1	273,400	1.8	22.1
Other firm-textured.....	287,900	2.1	23.3	64,700	1.3	5.2	489,400	3.1	39.5
Total.....	3,996,100	29.8	32.2	914,800	17.9	7.4	4,421,000	28.4	35.7
Cypress.....	850,900	6.3	75.3	182,300	3.6	16.2	94,500	.6	8.4
All species.....	13,400,200	100.0	29.3	5,119,500	100.0	11.2	15,551,900	100.0	33.9
Tree-species group	North-central unit—1936			North unit—1936			All units—1934-36		
	Volume	Volume percent of—		Volume	Volume percent of—		Volume	Volume percent of—	
		Survey unit	Species group		Survey unit	Species group		Survey unit	Species group
Pines:									
Longleaf.....	155,700	2.5	4.0	18,500	0.3	0.5	3,861,100	8.4	100.0
Slash.....							5,317,200	11.6	100.0
Shortleaf.....	2,108,600	34.2	31.9	2,289,100	41.3	34.6	6,611,500	14.4	100.0
Loblolly.....	2,522,200	40.8	17.1	806,400	14.5	5.5	14,717,200	32.1	100.0
Others.....	35,200	.6	2.0	722,700	13.0	41.0	1,763,400	3.9	100.0
Total.....	4,821,700	78.1	14.9	3,836,700	69.1	11.9	32,270,400	70.4	100.0
Hardwoods:									
Red gum.....	185,700	3.0	7.7	32,100	.6	1.3	2,409,300	5.3	100.0
Black and tupelo gums.....	98,900	1.6	3.9	61,200	1.1	2.4	2,524,400	5.5	100.0
Other soft-textured.....	472,300	7.6	18.4	242,600	4.4	9.5	2,563,000	5.6	100.0
Red oaks.....	207,200	3.4	8.5	700,300	12.6	28.9	2,427,500	5.3	100.0
White oaks.....	221,000	3.6	17.9	450,900	8.1	36.4	1,237,900	2.7	100.0
Other firm-textured.....	169,100	2.7	13.7	226,600	4.1	18.3	1,237,700	2.7	100.0
Total.....	1,354,200	21.9	10.9	1,713,700	30.9	13.8	12,399,800	27.1	100.0
Cypress.....				900	(²)	.1	1,128,600	2.5	100.0
All species.....	6,175,900	100.0	13.5	5,551,300	100.0	12.1	45,798,800	100.0	100.0

¹ Based on International 1/4-inch rule.

² Negligible.

TABLE 40. - Net board-foot volume (lumber tally),¹ by forest condition and principal species group

Forest condition and species group ²	Southeast unit—1934			Southwest unit—1934			Central unit—1934		
	Volume percent of—			Volume percent of—			Volume percent of—		
	Volume	Survey unit	Species group	Volume	Survey unit	Species group	Volume	Survey unit	Species group
Old-growth, uncut:	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>
Pines	966,800	11.3	34.1	398,700	9.9	14.0	921,200	8.3	32.4
Hardwoods:									
Soft-textured	1,321,900	36.5	53.7	210,000	25.7	8.5	537,900	23.8	30.0
Firm-textured	614,500	49.9	41.2	84,600	30.3	5.7	354,300	25.0	23.8
Total	2,903,200	21.7	42.7	693,300	13.5	10.2	2,013,400	12.9	26.7
Old-growth, partly cut:									
Pines	1,468,500	17.2	44.7	872,500	21.7	26.6	549,000	5.0	16.8
Hardwoods:									
Soft-textured	938,500	26.0	50.1	307,500	37.6	16.4	516,400	16.7	27.0
Firm-textured	236,100	19.2	26.7	90,500	32.4	10.2	251,300	17.7	26.4
Total	2,643,100	19.7	43.8	1,270,500	24.8	21.0	1,316,700	8.5	21.8
Second-growth, sawlog-size, uncut:									
Pines	4,688,200	54.8	25.0	2,066,000	51.4	11.0	6,390,600	57.9	44.0
Hardwoods:									
Soft-textured	1,044,100	28.8	35.0	231,000	28.3	7.8	1,103,300	35.6	37.0
Firm-textured	290,600	23.6	17.3	78,400	28.1	4.7	469,400	33.1	27.9
Total	6,022,900	45.0	25.8	2,375,400	46.4	10.1	7,963,300	51.2	34.0
Second-growth, sawlog-size, partly cut:									
Pines	624,200	7.3	11.5	276,000	6.9	5.1	2,797,200	25.3	51.8
Hardwoods:									
Soft-textured	197,300	5.5	18.4	35,500	4.3	3.3	687,500	22.2	64.2
Firm-textured	65,700	5.3	10.1	9,300	3.3	1.4	308,200	21.7	47.3
Total	887,200	6.6	12.4	320,800	6.3	4.5	3,792,900	24.4	55.3
All under-sawlog-size conditions: ³									
Pines	805,500	9.4	40.6	409,200	10.1	20.6	378,400	3.7	19.1
Hardwoods:									
Soft-textured	114,000	3.2	47.4	33,900	4.1	14.1	52,800	1.7	22.0
Firm-textured	24,300	2.0	12.5	16,400	5.9	8.4	34,400	2.7	17.7
Total	943,800	7.0	39.0	459,500	9.0	19.0	465,600	4.0	19.3
All conditions:									
Pines	8,553,200	100.0	26.5	4,022,400	100.0	12.5	11,036,400	100.0	34.2
Hardwoods:									
Soft-textured	3,615,800	100.0	41.9	817,900	100.0	9.5	3,097,900	100.0	35.9
Firm-textured	1,231,200	100.0	25.1	279,200	100.0	5.7	1,417,600	100.0	28.9
Total	13,400,200	100.0	29.3	5,119,500	100.0	11.2	15,551,900	100.0	33.9
North-central unit—1936			North unit—1936			All units—1936			
Old-growth, uncut:									
Pines	195,600	4.0	6.9	356,500	9.3	12.6	2,818,800	8.8	100.0
Hardwoods:									
Soft-textured	90,500	12.0	3.7	102,000	30.3	4.1	2,462,300	28.7	100.0
Firm-textured	78,200	13.1	5.2	360,000	26.1	24.1	1,491,600	30.4	100.0
Total	364,300	5.9	5.4	818,500	14.8	12.0	6,792,700	14.8	100.0
Old-growth, partly cut:									
Pines	171,500	3.6	5.2	220,100	5.7	6.7	3,281,600	10.2	100.0
Hardwoods:									
Soft-textured	66,900	8.8	3.6	43,600	12.9	2.3	1,872,900	21.7	100.0
Firm-textured	91,400	15.3	10.3	215,500	15.7	24.4	884,800	18.0	100.0
Total	329,800	5.3	5.5	479,200	8.6	7.9	6,039,300	8.2	100.0
Second-growth, sawlog-size, uncut:									
Pines	3,164,000	65.6	16.9	2,453,600	64.0	13.1	18,762,400	88.2	100.0
Hardwoods:									
Soft-textured	460,800	60.9	15.5	139,700	41.5	4.7	2,978,900	58.0	100.0
Firm-textured	264,100	44.2	15.7	578,400	42.0	34.4	1,680,900	31.8	100.0
Total	3,888,900	63.0	16.6	3,171,700	57.1	13.5	23,422,200	88.0	100.0

See footnotes at end of table.

TABLE 40.—*Net board-foot volume (lumber tally),¹ by forest condition and principal species group—Continued*

Forest condition and species group ²	North-central unit—1936			North unit—1936			All units—1934-36		
	Volume	Volume percent of—		Volume	Volume percent of—		Volume	Volume percent of—	
		Survey unit	Species group		Survey unit	Species group		Survey unit	Species group
Second-growth, sawlog-size, partly cut:	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>Percent</i>
Pines.....	1, 092, 700	22. 7	20. 2	615, 000	16. 0	11. 4	5, 405, 100	16. 7	100. 0
Hardwoods:									
Soft-textured.....	115, 300	15. 2	10. 8	35, 200	10. 5	3. 3	1, 070, 800	12. 4	100. 0
Firm-textured.....	134, 300	22. 5	20. 6	134, 100	9. 7	20. 6	651, 600	13. 3	100. 0
Total.....	1, 342, 300	21. 7	18. 8	784, 300	14. 1	11. 0	7, 127, 500	15. 6	100. 0
All under-sawlog-size conditions: ³									
Pines.....	197, 900	4. 1	10. 0	191, 500	5. 0	9. 7	1, 982, 500	6. 1	100. 0
Hardwoods:									
Soft-textured.....	23, 400	3. 1	9. 7	16, 300	4. 8	6. 8	240, 400	2. 8	100. 0
Firm-textured.....	29, 300	4. 9	15. 1	89, 800	6. 5	46. 3	194, 200	4. 0	100. 0
Total.....	250, 600	4. 1	10. 4	297, 600	5. 4	12. 3	2, 417, 100	5. 3	100. 0
All conditions:									
Pines.....	4, 821, 700	100. 0	14. 9	3, 836, 700	100. 0	11. 9	32, 270, 400	100. 0	100. 0
Hardwoods:									
Soft-textured.....	756, 900	100. 0	8. 8	336, 800	100. 0	3. 9	8, 625, 300	100. 0	100. 0
Firm-textured.....	597, 300	100. 0	12. 2	1, 377, 800	100. 0	28. 1	4, 903, 100	100. 0	100. 0
Total.....	6, 175, 900	100. 0	13. 5	5, 551, 300	100. 0	12. 1	45, 798, 800	100. 0	100. 0

¹ Based on International ¼-inch rule.² Cypress is included in soft-textured hardwoods.³ Mainly in residual sawlog-size trees.TABLE 41.—*Net board-foot volume¹ by species and tree-diameter group*

Species group and tree-diameter group (inches)	Southeast unit—1934	South-west unit—1934	Central unit—1936	North-central unit—1936	North unit—1936	All units—1934-36	
Pines:	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Percent</i>
10 to 12.....	3, 283, 500	1, 555, 300	4, 441, 200	2, 031, 200	2, 017, 700	13, 328, 900	41. 3
14 to 16.....	3, 149, 000	1, 423, 700	3, 502, 800	1, 584, 500	1, 096, 700	10, 756, 700	33. 3
18 to 20.....	1, 290, 900	626, 000	1, 882, 800	775, 900	438, 900	5, 014, 500	15. 6
22 and up.....	829, 800	417, 400	1, 209, 600	430, 100	283, 400	3, 170, 300	9. 8
Total.....	8, 553, 200	4, 022, 400	11, 036, 400	4, 821, 700	3, 836, 700	32, 270, 400	100. 0
<i>Percent</i>	26. 5	12. 5	34. 2	14. 9	11. 9		100. 0
Hardwoods:	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	
14 to 18.....	2, 077, 800	554, 200	2, 608, 600	849, 100	1, 063, 100	7, 152, 800	57. 7
20 to 28.....	1, 501, 200	302, 400	1, 630, 000	464, 000	566, 900	4, 464, 500	36. 0
30 and up.....	417, 100	58, 200	182, 400	41, 100	83, 700	782, 500	6. 3
Total.....	3, 996, 100	914, 800	4, 421, 000	1, 354, 200	1, 713, 700	12, 399, 800	100. 0
<i>Percent</i>	32. 2	7. 4	35. 7	10. 9	13. 8		100. 0
Cypress:	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>		
10 to 12.....	403, 300	91, 900	27, 200		400	522, 800	46. 3
14 to 16.....	203, 900	46, 500	25, 600		500	276, 500	24. 5
18 to 20.....	80, 000	15, 700	20, 200			115, 900	10. 3
22 and up.....	163, 700	28, 200	21, 500			213, 400	18. 9
Total.....	850, 900	182, 300	94, 500		900	1, 128, 600	100. 0
<i>Percent</i>	75. 3	16. 2	8. 4		. 1		100. 0
All species.....	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>		
	13, 400, 200	5, 119, 500	15, 551, 900	6, 175, 900	5, 551, 300	45, 798, 800	
<i>Percent</i>	29. 3	11. 2	33. 9	13. 5	12. 1		100. 0

¹ Lumber tally, based on International ¼-inch rule.

TABLE 42.—*Net cubic-foot volume of sound material*¹ *by species group and quality class*—Continued

Species group ² and quality class	North-Central unit—1936			North unit—1936			All units—1934-36		
	Volume	Volume percent of—		Volume	Volume percent of—		Volume	Volume percent of—	
		Species group	Quality class		Species group	Quality class		Species group	Quality class
Hardwood—Continued.									
Firm-textured:									
Sound trees, sawlog size:	<i>M cubic feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M cubic feet</i>	<i>Percent</i>	<i>Percent</i>	<i>M cubic feet</i>	<i>Percent</i>	<i>Percent</i>
Sawlog material.....	108,090	23.1	12.6	246,320	21.9	28.8	856,060	26.1	100.0
Upper stems and limbs.....	56,400	12.1	12.3	132,760	11.8	29.1	456,730	13.9	100.0
Sound trees, under sawlog size.....	188,750	40.3	17.5	398,840	35.5	37.0	1,076,350	32.9	100.0
Sound culls.....	77,380	16.5	12.6	234,050	20.9	38.1	613,900	18.7	100.0
Rotten culls.....	37,590	8.0	13.7	111,670	9.9	40.7	274,500	8.4	100.0
Total.....	468,210	100.0	14.3	1,123,640	100.0	34.3	3,277,540	100.0	100.0
Total hardwood:									
Sound trees, sawlog size:									
Sawlog material.....	237,720	26.7	10.1	304,140	22.9	12.9	2,360,750	29.0	100.0
Upper stems and limbs.....	124,170	14.0	10.7	163,490	12.3	14.1	1,162,200	14.3	100.0
Sound trees, under sawlog size.....	326,910	36.7	11.5	459,780	34.7	16.1	2,851,600	35.1	100.0
Sound culls.....	133,200	15.0	11.7	264,350	19.9	23.2	1,139,530	14.0	100.0
Rotten culls.....	67,450	7.6	10.9	135,220	10.2	21.8	620,120	7.6	100.0
Total.....	889,450	100.0	10.9	1,326,980	100.0	16.3	8,134,200	100.0	100.0
Total, all species:									
Sound trees, sawlog size:									
Sawlog material.....	1,045,950	46.7	13.2	968,050	39.2	12.2	7,913,740	45.0	100.0
Upper stems and limbs.....	241,530	10.8	10.6	255,980	10.3	11.2	2,282,630	13.0	100.0
Sound trees, under sawlog size.....	702,410	31.3	12.9	779,500	31.5	14.3	5,439,140	30.9	100.0
Sound culls.....	180,420	8.1	13.7	329,390	13.3	25.1	1,312,580	7.5	100.0
Rotten culls.....	68,920	3.1	10.8	140,600	5.7	22.1	635,840	3.6	100.0
Total.....	2,229,230	100.0	12.7	2,473,520	100.0	14.1	17,583,930	100.0	100.0

¹ Excluding bark.² Cypress included with soft-textured hardwood.TABLE 43.—*Net cordwood volume of sound material*¹ *by species group and quality class*

Species group ² and quality class	Southeast unit—1934			Southwest unit—1934			Central unit—1936		
	Volume	Volume percent of—		Volume	Volume percent of—		Volume	Volume percent of—	
		Species group	Quality class		Species group	Quality class		Species group	Quality class
Pine:									
Sound trees, sawlog size:	<i>Cords</i>	<i>Percent</i>	<i>Percent</i>	<i>Cords</i>	<i>Percent</i>	<i>Percent</i>	<i>Cords</i>	<i>Percent</i>	<i>Percent</i>
Sawlog material.....	19,806,500	51.5	27.5	9,297,600	55.5	12.9	24,123,400	64.0	33.4
Upper stems.....	5,889,800	15.3	40.1	2,632,400	15.7	18.0	3,447,400	9.1	23.5
Sound trees, under sawlog size.....	12,481,900	32.5	34.5	4,668,500	27.9	12.9	9,611,400	25.5	26.6
Sound culls.....	215,100	.6	9.4	135,600	.8	6.0	455,800	1.2	20.1
Rotten culls.....	33,200	.1	16.1	18,700	.1	9.1	65,600	.2	31.8
Total.....	38,426,500	100.0	30.6	16,752,800	100.0	13.4	37,703,600	100.0	30.1
Hardwood:									
Soft-textured:									
Sound trees, sawlog size:									
Sawlog material.....	9,087,100	28.5	41.8	2,098,300	27.8	9.7	7,812,000	31.0	35.9
Upper stems and limbs.....	4,315,200	13.6	38.9	973,700	12.9	8.8	4,254,800	16.9	38.3
Sound trees, under sawlog size.....	12,866,300	40.4	46.0	2,634,400	34.9	9.4	9,352,800	37.0	33.4
Sound culls.....	3,208,300	10.1	39.7	1,413,700	18.7	17.5	2,138,500	8.5	26.4
Rotten culls.....	2,359,700	7.4	44.6	431,200	5.7	8.2	1,677,500	6.6	31.8
Total.....	31,836,600	100.0	42.9	7,551,300	100.0	10.2	25,235,600	100.0	34.0
Firm-textured:									
Sound trees, sawlog size:									
Sawlog material.....	2,940,000	30.2	23.5	683,300	23.6	5.5	3,659,700	27.8	29.3
Upper stems and limbs.....	1,709,200	17.6	23.7	384,800	13.3	5.3	2,139,900	16.2	29.7
Sound trees, under sawlog size.....	2,667,200	27.4	15.7	749,000	25.9	4.4	4,325,000	32.8	25.4
Sound culls.....	1,669,200	17.2	17.7	933,600	32.3	9.9	2,031,000	15.4	21.5
Rotten culls.....	741,800	7.6	17.5	142,100	4.9	3.4	1,033,200	7.8	24.5
Total.....	9,727,400	100.0	19.3	2,892,800	100.0	5.7	13,188,800	100.0	26.2

See footnotes at end of table.

TABLE 43.—*Net cordwood volume of sound¹ material by species group and quality class—Continued*

Species group ² and quality class	Southeast unit—1934			Southwest unit—1934			Central unit—1936		
	Volume	Volume percent of—		Volume	Volume percent of—		Volume	Volume percent of—	
		Species group	Quality class		Species group	Quality class		Species group	Quality class
Hardwood—Continued.									
Total hardwood:									
Sound trees, sawlog size:	<i>Cords</i>	<i>Percent</i>	<i>Percent</i>	<i>Cords</i>	<i>Percent</i>	<i>Percent</i>	<i>Cords</i>	<i>Percent</i>	<i>Percent</i>
Sawlog material	12,027,100	28.9	35.2	2,781,600	26.6	8.1	11,471,700	29.8	33.5
Upper stems and limbs	6,024,400	14.5	32.9	1,358,500	13.0	7.4	6,394,700	16.6	34.9
Sound trees, under sawlog size	15,533,500	37.4	34.5	3,383,400	32.4	7.5	13,677,800	35.6	30.4
Sound culls	4,877,500	11.7	27.8	2,347,300	22.5	13.4	4,169,500	10.9	23.8
Rotten culls	3,101,500	7.5	32.7	573,300	5.5	6.0	2,710,700	7.1	28.5
Total	41,564,000	100.0	33.4	10,444,100	100.0	8.4	38,424,400	100.0	30.8
Total, all species:									
Sound trees, sawlog size:									
Sawlog material	31,833,600	39.8	29.9	12,079,200	44.4	11.4	35,595,100	46.8	33.4
Upper stems and limbs	11,914,200	14.9	36.1	3,990,900	14.7	12.1	9,842,100	12.9	29.9
Sound trees, under sawlog size	28,015,400	35.0	34.5	8,051,900	29.6	9.9	23,289,200	30.6	28.7
Sound culls	5,092,600	6.4	25.7	2,482,900	9.1	12.5	4,625,300	6.1	23.4
Rotten culls	3,134,700	3.9	32.3	592,000	2.2	6.1	2,776,300	3.6	28.5
Total	79,990,500	100.0	32.0	27,196,900	100.0	10.9	76,128,000	100.0	30.5
	North-central unit—1936			North unit—1936			All units—1934-36		
Pine:									
Sound trees, sawlog size:									
Sawlog material	10,402,500	58.8	14.4	8,478,200	57.0	11.8	72,108,200	57.5	100.0
Upper stems	1,513,200	8.6	10.3	1,182,100	8.0	8.1	14,664,900	11.7	100.0
Sound trees, under sawlog size	5,139,500	29.0	14.2	4,284,600	28.8	11.8	36,185,900	28.8	100.0
Sound culls	619,100	3.5	27.3	845,100	5.7	37.2	2,270,700	1.8	100.0
Rotten culls	19,300	.1	9.4	69,500	.5	33.6	206,300	.2	100.0
Total	17,693,600	100.0	14.1	14,859,500	100.0	11.8	125,436,000	100.0	100.0
Hardwood:									
Soft-textured:									
Sound trees, sawlog size:									
Sawlog material	1,892,900	29.3	8.7	842,700	27.1	3.9	21,733,000	29.3	100.0
Upper stems and limbs	1,067,400	16.6	9.6	483,900	15.5	4.4	11,095,000	15.0	100.0
Sound trees, under sawlog size	2,171,800	33.7	7.8	960,200	30.8	3.4	27,985,500	37.7	100.0
Sound culls	854,000	13.3	10.6	466,500	15.0	5.8	8,081,000	10.9	100.0
Rotten culls	456,800	7.1	8.6	361,600	11.6	6.8	5,286,800	7.1	100.0
Total	6,442,900	100.0	8.7	3,114,900	100.0	4.2	74,181,300	100.0	100.0
Firm-textured:									
Sound trees, sawlog size:									
Sawlog material	1,589,900	22.0	12.7	3,613,300	20.9	29.0	12,486,200	24.8	100.0
Upper stems and limbs	888,200	12.3	12.3	2,091,100	12.1	29.0	7,213,200	14.3	100.0
Sound trees, under sawlog size	2,980,700	41.2	17.5	6,291,100	36.3	37.0	17,013,300	33.8	100.0
Sound culls	1,195,500	16.5	12.7	3,608,300	20.8	38.2	9,437,600	18.7	100.0
Rotten culls	580,800	8.0	13.8	1,722,100	9.9	40.8	4,220,300	8.4	100.0
Total	7,235,100	100.0	14.4	17,326,500	100.0	34.4	50,370,600	100.0	100.0
Total hardwood:									
Sound trees, sawlog size:									
Sawlog material	3,482,800	25.5	10.2	4,456,000	21.8	13.0	34,219,200	27.5	100.0
Upper stems and limbs	1,955,600	14.3	10.7	2,575,000	12.6	14.1	18,308,200	14.7	100.0
Sound trees, under sawlog size	5,152,500	37.6	11.5	7,251,600	35.5	16.1	44,998,800	36.1	100.0
Sound culls	2,049,500	15.0	11.7	4,074,800	19.9	23.3	17,518,600	14.1	100.0
Rotten culls	1,037,600	7.6	10.9	2,084,000	10.2	21.9	9,507,100	7.6	100.0
Total	13,678,000	100.0	11.0	20,441,400	100.0	16.4	124,551,900	100.0	100.0
Total, all species:									
Sound trees, sawlog size:									
Sawlog material	13,885,300	44.2	13.1	12,934,200	36.7	12.2	106,327,400	42.5	100.0
Upper stems and limbs	3,468,800	11.1	10.5	3,757,100	10.6	11.4	32,973,100	13.2	100.0
Sound trees, under sawlog size	10,292,000	32.8	12.7	11,536,200	32.7	14.2	81,184,700	32.5	100.0
Sound culls	2,668,600	8.5	13.5	4,919,900	13.9	24.9	19,789,300	7.9	100.0
Rotten culls	1,056,900	3.4	10.9	2,153,500	6.1	22.2	9,713,400	3.9	100.0
Total	31,371,600	100.0	12.5	35,300,900	100.0	14.1	249,987,900	100.0	100.0

¹ Including bark.² Cypress included with soft-textured hardwoods.

TABLE 44.—*Pine poles or piles by stick length and diameter*

Survey unit and pole or pile length (feet)	7.0-10.9 inches d. b. h.	11.0-14.9 inches d. b. h.	15.0-18.9 inches d. b. h.	All diameters	
	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>Percent</i>
South Georgia units, 1934					
20	13,608	4,109	359	18,076	50.0
25	4,590	2,855	584	8,029	22.2
30	2,185	1,906	641	4,732	13.1
35	870	1,463	504	2,837	7.8
40	339	971	301	1,611	4.5
45	35	339	172	546	1.5
50		107	109	216	.6
55+		22	91	113	.3
All lengths	21,627	11,772	2,761	36,160	100.0
	<i>Percent</i> 59.8	<i>Percent</i> 32.6	<i>Percent</i> 7.6	<i>Percent</i> 100.0	
Central, north-central, and north Georgia units, 1936					
	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>Percent</i>
20	10,412	2,657		13,069	44.8
25	4,821	2,084	174	7,079	24.2
30	2,600	2,331	292	5,223	17.9
35	721	1,223	221	2,165	7.4
40	244	670	142	1,056	3.6
45		307	79	386	1.3
50		104	46	150	.5
55+		59	40	99	.3
All lengths	18,798	9,435	994	29,227	100.0
	<i>Percent</i> 64.3	<i>Percent</i> 32.3	<i>Percent</i> 3.4	<i>Percent</i> 100.0	
State total, 1934-36:					
	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	
20	24,020	6,766	359	31,145	47.7
25	9,411	4,939	758	15,108	23.1
30	4,785	4,237	933	9,955	15.2
35	1,591	2,686	725	5,002	7.6
40	583	1,641	443	2,667	4.1
45	35	646	251	932	1.4
50		211	155	366	.6
55+		81	131	212	.3
All lengths	40,425	21,207	3,755	65,387	100.0
	<i>Percent</i> 61.9	<i>Percent</i> 32.4	<i>Percent</i> 5.7	<i>Percent</i> 100.0	

TABLE 45.—Area and gross board-foot volume of saw timber, by volume of saw timber per acre and forest-type group
AREA

Survey unit and date and saw-timber-per-acre class (board feet) ¹	Turpentine pine		Nonturpentine pine		Upland hardwood		Bottom-land hardwood		All type groups	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Southeast (1934):										
Less than 1,000	337,800	15.5	44,400	6.6	9,300	42.7	31,100	4.7	422,600	12.0
1,000-1,999	781,400	35.9	110,500	16.6	3,900	17.9	91,800	13.9	987,600	28.0
2,000-2,999	408,600	18.7	108,200	16.2	3,900	17.9	90,300	13.7	611,000	17.3
3,000-3,999	233,500	10.7	100,400	15.0	1,600	7.3	82,500	12.6	418,000	11.8
4,000-4,999	158,000	7.3	69,300	10.4			74,700	11.3	302,000	8.6
5,000-9,999	214,100	9.8	166,500	24.9	3,100	14.2	180,600	27.4	584,300	16.0
10,000 or more	45,900	2.1	68,500	10.3			108,200	16.4	222,600	6.3
Total	2,179,300	100.0	667,800	100.0	21,800	100.0	659,200	100.0	3,528,100	100.0
Southwest (1934):										
Less than 1,000	157,400	16.9	18,400	6.5	11,100	34.0	22,400	11.3	209,300	14.5
1,000-1,999	335,500	35.9	51,100	18.2	6,400	19.6	41,600	20.8	434,600	30.0
2,000-2,999	163,800	17.5	47,900	17.0	8,000	24.5	26,400	13.3	246,100	17.0
3,000-3,999	116,600	12.5	32,700	11.6	2,400	7.3	25,600	12.9	177,300	12.3
4,000-4,999	53,500	5.7	28,000	10.0	2,400	7.3	21,500	10.8	105,400	7.3
5,000-9,999	89,400	9.6	66,300	23.6	2,400	7.3	44,800	22.5	202,900	14.0
10,000 or more	17,600	1.9	36,700	13.1			16,800	8.4	71,100	4.9
Total	933,800	100.0	281,100	100.0	32,700	100.0	199,100	100.0	1,446,700	100.0
Survey unit and date and saw-timber-per-acre class (board feet) ¹	Pine and pine-hardwood		Upland hardwood		Bottom-land hardwood		All type groups			
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent		
Central (1936):										
Less than 1,000	148,900	5.9	24,300	8.4	12,500	2.5	185,700	5.6		
1,000-1,999	544,400	21.4	70,300	24.1	71,100	14.3	685,800	20.6		
2,000-2,999	411,500	16.2	58,500	20.1	73,600	14.8	543,600	16.4		
3,000-3,999	339,600	13.4	46,800	16.1	52,700	10.6	439,100	13.2		
4,000-4,999	243,400	9.6	25,900	8.9	53,500	10.8	322,800	9.7		
5,000-9,999	556,100	21.9	53,500	18.4	162,300	32.7	771,900	23.2		
10,000 or more	293,600	11.6	11,700	4.0	71,100	14.3	376,400	11.3		
Total	2,537,500	100.0	291,000	100.0	496,800	100.0	3,325,300	100.0		
North-central (1936):										
Less than 1,000	52,800	4.9	9,700	5.0	1,600	1.9	64,100	4.7		
1,000-1,999	235,300	21.7	53,600	27.7	11,400	13.8	300,300	22.1		
2,000-2,999	178,500	16.4	44,600	23.1	11,400	13.8	234,500	17.2		
3,000-3,999	120,900	11.1	30,000	15.5	9,800	11.8	160,700	11.8		
4,000-4,999	93,300	8.6	17,900	9.3	10,500	12.7	121,700	8.9		
5,000-9,999	280,700	25.8	34,200	17.7	28,400	34.3	343,300	25.2		
10,000 or more	125,000	11.5	3,200	1.7	9,700	11.7	137,900	10.1		
Total	1,086,500	100.0	193,200	100.0	82,800	100.0	1,362,500	100.0		
North (1936):										
Less than 1,000	34,400	3.3	120,400	20.8	3,200	4.8	158,000	9.3		
1,000-1,999	257,200	24.3	190,800	32.9	9,400	14.0	457,400	26.8		
2,000-2,999	221,300	20.9	118,000	20.3	14,900	22.1	354,200	20.8		
3,000-3,999	157,200	14.9	60,200	10.4	7,800	11.6	225,200	13.2		
4,000-4,999	110,300	10.4	39,900	6.9	7,800	11.6	158,000	9.3		
5,000-9,999	226,800	21.5	45,300	7.8	20,300	30.1	292,400	17.1		
10,000 or more	50,000	4.7	5,500	.9	3,900	5.8	59,400	3.5		
Total	1,057,200	100.0	580,100	100.0	67,300	100.0	1,704,600	100.0		
All units (1934-36):										
Less than 1,000	794,100	9.1	174,800	15.6	70,800	4.7	1,039,700	9.1		
1,000-1,999	2,315,400	26.5	325,000	29.1	225,300	15.0	2,865,700	25.3		
2,000-2,999	1,539,800	17.6	233,000	20.8	216,600	14.4	1,989,400	17.5		
3,000-3,999	1,100,900	12.6	141,000	12.6	178,400	11.9	1,420,300	12.5		
4,000-4,999	755,800	8.6	86,100	7.7	168,000	11.2	1,009,900	8.9		
5,000-9,999	1,599,900	18.3	138,500	12.4	436,400	28.9	2,174,800	19.1		
10,000 or more	637,300	7.3	20,400	1.8	209,700	13.9	867,400	7.6		
Total	8,743,200	100.0	1,118,800	100.0	1,505,200	100.0	11,367,200	100.0		

See footnotes at end of table.

TABLE 45—Area and gross board-foot volume of saw timber, by volume of saw timber per acre and forest-type group—Continued

VOLUME

Survey unit and date and saw-timber-per-acre class (board feet) ¹	Turpentine pine		Nonturpentine pine		Upland hardwood		Bottom-land hardwood		All type groups	
	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>
Southeast (1934):										
Less than 1,000	252,200	4.3	33,300	1.0	2,300	5.0	19,900	0.5	307,700	2.3
1,000-1,999	1,137,600	19.2	163,700	5.1	5,000	10.8	138,200	3.6	1,444,500	11.0
2,000-2,999	987,500	16.6	267,300	8.3	9,600	20.7	225,500	5.8	1,489,900	11.4
3,000-3,999	804,900	13.6	350,600	10.9	5,000	10.8	283,700	7.3	1,444,200	11.0
4,000-4,999	703,900	11.9	308,200	9.5			334,800	8.6	1,346,900	10.3
5,000-9,999	1,439,200	24.2	1,128,100	34.9	24,400	52.7	1,292,500	33.2	3,884,200	29.7
10,000 or more	604,900	10.2	978,800	30.3			1,593,800	41.0	3,177,500	24.3
Total	5,930,200	100.0	3,230,000	100.0	46,300	100.0	3,888,400	100.0	13,094,900	100.0
Southwest (1934):										
Less than 1,000	111,300	4.5	12,600	.9	4,400	0.5	11,500	1.4	139,800	2.9
1,000-1,999	484,200	19.4	75,100	5.2	10,000	14.8	60,400	7.4	629,700	13.0
2,000-2,999	399,100	16.0	119,800	8.2	20,100	29.8	64,400	7.9	603,400	12.5
3,000-3,999	406,500	16.3	114,100	7.8	8,400	12.5	88,000	10.8	617,000	12.8
4,000-4,999	237,900	9.5	127,100	8.7	10,900	16.2	96,500	11.8	472,400	9.8
5,000-9,999	600,900	24.1	459,700	31.6	13,600	20.2	292,800	35.8	1,367,000	28.2
10,000 or more	254,200	10.2	547,100	37.6			203,700	24.9	1,005,000	20.8
Total	2,494,100	100.0	1,455,500	100.0	67,400	100.00	817,300	100.0	4,834,300	100.0

Survey unit and date and saw-timber-per-acre class (board feet) ¹	Pine and pine-hardwood		Upland hardwood		Bottom-land hardwood		All type groups	
	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>	<i>M board feet</i>	<i>Percent</i>
Central (1936):								
Less than 1,000	115,900	0.9	19,000	1.8	9,700	0.3	144,600	0.9
1,000-1,999	819,100	6.5	104,800	9.8	109,000	3.8	1,032,900	6.2
2,000-2,999	1,014,200	8.1	146,200	13.7	177,700	6.1	1,338,100	8.1
3,000-3,999	1,175,600	9.4	162,400	15.1	181,900	6.3	1,519,900	9.2
4,000-4,999	1,090,800	8.7	116,600	10.9	239,800	8.3	1,447,200	8.8
5,000-9,999	3,900,900	31.0	371,400	34.7	1,149,700	39.7	5,422,000	32.8
10,000 or more	4,452,000	35.4	150,000	14.0	1,027,300	35.5	5,629,300	34.0
Total	12,538,500	100.0	1,070,400	100.0	2,895,100	100.0	16,534,000	100.0
North-central (1936):								
Less than 1,000	43,100	.8	7,900	1.2	1,100	.2	52,100	.8
1,000-1,999	358,500	6.7	77,400	12.1	17,300	3.9	453,200	7.0
2,000-2,999	438,200	8.2	110,700	17.4	29,400	6.6	578,300	9.0
3,000-3,999	420,300	7.8	103,300	16.2	34,700	7.8	558,300	8.7
4,000-4,999	417,900	7.8	77,900	12.2	47,700	10.6	543,500	8.4
5,000-9,999	1,964,300	36.5	223,800	35.2	190,000	42.5	2,378,100	36.8
10,000 or more	1,731,400	32.2	36,600	5.7	126,900	28.4	1,894,900	29.3
Total	5,373,700	100.0	637,600	100.0	447,100	100.0	6,458,400	100.0
North (1936):								
Less than 1,000	29,100	.7	57,900	4.2	2,500	.8	89,500	1.5
1,000-1,999	387,500	9.2	279,500	20.3	14,000	4.5	681,000	11.5
2,000-2,999	550,300	13.1	288,400	21.0	36,600	11.8	875,300	14.9
3,000-3,999	544,900	12.9	206,700	15.0	26,800	8.7	778,400	13.2
4,000-4,999	490,200	11.6	176,900	12.9	35,300	11.4	702,400	11.9
5,000-9,999	1,561,800	37.1	303,100	22.0	140,300	45.3	2,005,200	34.0
10,000 or more	647,900	15.4	63,300	4.6	54,100	17.5	765,300	13.0
Total	4,211,700	100.0	1,375,800	100.0	309,600	100.0	5,897,100	100.0
All units (1934-36):								
Less than 1,000	597,500	1.7	91,500	2.9	44,700	.5	733,700	1.6
1,000-1,999	3,425,700	9.7	476,700	14.9	338,900	4.1	4,241,300	9.1
2,000-2,999	3,776,400	10.7	575,000	18.0	533,600	6.4	4,885,000	10.4
3,000-3,999	3,816,900	10.8	485,800	15.2	615,100	7.4	4,917,800	10.5
4,000-4,999	3,376,000	9.6	382,300	12.0	754,100	9.0	4,512,400	9.6
5,000-9,999	11,054,900	31.4	936,300	29.2	3,065,300	36.6	15,056,500	32.2
10,000 or more	9,216,300	26.1	249,900	7.8	3,005,800	36.0	12,472,000	26.6
Total	35,263,700	100.0	3,197,500	100.0	8,357,500	100.0	46,818,700	100.0

¹ Gross volume, International $\frac{1}{4}$ -inch rule.

TABLE 46.—Average net board-foot volume per acre by forest condition
NAVAL STORES REGION—1931

Type group, survey unit, and species group ¹	Old growth		Second growth			All condi- tions ¹
	Uncut	Partly cut	Sawlog size		Under saw- log size ²	
			Uncut	Partly cut		
Longleaf-slash pines:	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>
Southeast:						
Turpentine pines.....	1,291	2,655	1,957	1,498	268	1,058
Nonturpentine pines.....	374	163	234	376	29	116
Hardwoods.....	250	274	124	292	5	77
Cypress.....	486	291	100	148	20	78
Total.....	5,401	3,383	2,415	2,314	322	1,329
Southwest:						
Turpentine pines.....	6,716	2,649	2,205	1,729	325	1,196
Nonturpentine pines.....	212	145	204	233	32	97
Hardwoods.....	312	127	74	67	6	43
Cypress.....	169	84	16	72	8	22
Total.....	7,409	3,005	2,499	2,101	371	1,358
Loblolly and other pines:						
Southeast:						
Turpentine pines.....	157	245	236	108	31	152
Nonturpentine pines.....	5,196	2,491	3,592	2,212	323	2,447
Hardwoods.....	1,274	1,081	618	781	68	568
Cypress.....	179	52	47	3	4	40
Total.....	6,806	3,869	4,493	3,134	426	3,207
Southwest:						
Turpentine pines.....	282	276	337	271	57	214
Nonturpentine pines.....	8,027	2,907	3,564	2,845	363	2,517
Hardwoods.....	2,173	942	365	357	87	442
Cypress.....	10		4			2
Total.....	10,492	4,125	4,270	3,473	507	3,175
Hardwoods:						
Southeast:						
All pines.....	116	82	206	60	37	105
Hardwoods.....	7,616	5,259	2,974	2,231	174	3,375
Cypress.....	281	145	123	163	22	131
Total.....	8,013	5,486	3,303	2,454	233	3,611
Southwest:						
All pines.....	202	189	279	134	64	159
Hardwoods.....	4,664	2,464	3,075	857	125	1,588
Cypress.....	96	258	129	71	5	91
Total.....	4,962	2,911	3,483	1,062	194	1,818
Cypress:						
Southeast:						
All pines.....	399	98	160		36	132
Hardwoods.....	1,979	1,268	2,104		22	1,101
Cypress.....	2,723	2,341	1,910		211	1,634
Total.....	5,101	3,707	4,174		269	2,867
Southwest:						
All pines.....	229	250	312			130
Hardwoods.....	1,616	399	63			266
Cypress.....	2,979	2,295	3,417	2,625	130	1,486
Total.....	4,824	2,944	3,792	2,625	130	1,882

¹ Cypress included with hardwoods in the pine-hardwood region.

² Does not include areas of reproduction of clear-cut forest conditions.

³ Includes areas of reproduction and clear-cut forest conditions.

TABLE 46.—Average net board-foot volume per acre by forest condition—Continued

PINE-HARDWOOD REGION—1936

Type group, survey unit, and species group	Old growth		Second growth			All conditions
	Uncut	Partly cut	Sawlog size		Under saw-log size	
			Uncut	Partly cut		
Loblolly-shortleaf pines:	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>
Central:	13,252	5,701	5,263	2,957	251	2,964
Pines	798	179	86	72	7	67
Hardwoods	14,050	5,880	5,349	3,029	258	3,031
Total						
North-central:	10,977	5,383	5,200	3,369	225	2,797
Pines	323	194	131	65	7	69
Hardwoods	11,300	5,577	5,331	3,434	232	2,866
Total						
North:	5,918	4,150	4,058	3,142	257	2,772
Pines	204	142	92	59	7	65
Hardwoods	6,122	4,292	4,150	3,201	264	2,837
Total						
Loblolly-shortleaf pines-hardwoods:						
Central:	6,552	3,302	2,750	1,738	200	1,305
Pines	5,260	2,719	1,824	1,345	46	921
Hardwoods	11,812	6,021	4,574	3,083	246	2,226
Total						
North-central:	6,301	4,056	2,445	1,561	196	1,052
Pines	4,000	1,809	1,560	1,241	69	668
Hardwoods	10,301	5,865	4,005	2,802	265	1,720
Total						
North:	3,697	2,412	1,838	1,226	271	1,001
Pines	1,179	1,147	772	811	77	425
Hardwoods	4,876	3,559	2,610	2,037	348	1,426
Total						
Upland hardwoods:						
Central:	467	295	227	238	40	147
Pines	4,021	3,563	2,624	2,192	80	1,333
Hardwoods	4,488	3,858	2,851	2,430	120	1,480
Total						
North-central:	309	302	267	150	63	157
Pines	4,173	2,896	2,718	1,686	128	1,442
Hardwoods	4,482	3,198	2,985	1,836	191	1,599
Total						
North:	213	177	77	63	56	93
Pines	2,809	2,254	1,446	1,215	182	1,156
Hardwoods	3,022	2,431	1,523	1,278	238	1,249
Total						
Bottomland hardwoods:						
Central:	225	125	117	121	52	117
Pines	7,646	5,570	4,065	3,371	202	3,704
Hardwoods	7,871	5,695	4,182	3,492	254	3,821
Total						
North-central:	145	235	154	246	30	101
Pines	4,898	3,642	4,728	2,616	138	2,375
Hardwoods	5,043	3,877	4,882	2,862	168	2,476
Total						
North:	1,656	333	164	245	62	400
Pines	5,242	3,735	2,866	1,329	259	2,390
Hardwoods	6,898	4,068	3,030	1,574	321	2,790
Total						

TABLE 47. Average net cordwood volume per acre by forest condition¹

NAVAL STORES REGION 1933

Type group, survey unit, and species group ²	Old growth		Second growth			All conditions ⁴
	Uncut	Partly cut	Saw log size		Under saw log size ³	
			Uncut	Partly cut		
	Cords	Cords	Cords	Cords	Cords	Cords
Longleaf-slash pines:						
Southeast:						
Turpentine pines	13.3	9.0	10.0	7.6	3.0	5.7
Nonturpentine pines	1.1	.5	.8	1.3	.2	.4
Hardwoods	3.1	2.4	1.8	3.6	.2	1.0
Cypress	2.1	1.3	.5	.7	.2	.4
Total	19.6	13.2	13.1	13.2	3.6	7.5
Southwest:						
Turpentine pines	17.6	8.2	10.1	8.1	3.2	5.9
Nonturpentine pines	.6	.4	.7	.8	.2	.4
Hardwoods	3.3	1.1	.6	.9	.1	.4
Cypress	.4	.4	.1	.3	.1	.1
Total	21.9	10.1	11.5	10.1	3.6	6.4
Loblolly and other pines:						
Southeast:						
Turpentine pines	.5	.8	1.0	.6	.3	.7
Nonturpentine pines	13.2	6.7	11.0	7.2	2.3	7.7
Hardwoods	6.4	7.3	4.9	5.4	1.2	4.1
Cypress	.4	.2	.1	.1	.1	.1
Total	20.5	15.0	17.0	13.2	3.8	12.4
Southwest:						
Turpentine pines	.7	1.0	1.4	1.0	.3	.9
Nonturpentine pines	18.6	7.5	11.2	8.6	2.9	7.8
Hardwoods	8.9	5.4	2.9	2.2	1.0	2.8
Cypress	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Total	28.2	13.9	15.5	11.8	4.2	11.7
Hardwoods:						
Southeast:						
All pines	.3	.3	.6	.3	.2	.3
Hardwoods	27.7	22.0	18.3	16.2	3.1	15.6
Cypress	.8	.4	.4	.5	.1	.4
Total	28.8	22.7	19.3	17.0	3.4	16.3
Southwest:						
All pines	.7	.6	.8	.5	.3	.7
Hardwoods	18.5	11.4	16.2	6.4	2.5	8.2
Cypress	.2	.6	.4	.2	.1	.2
Total	19.4	12.6	17.4	6.8	2.8	8.9
Cypress:						
Southeast:						
All pines	1.1	.5	.5		.2	
Hardwoods	11.2	11.8	19.1		2.8	9.7
Cypress	8.9	7.7	6.8		2.3	5.9
Total	21.2	20.0	26.4		5.3	15.7
Southwest:						
All pines	.7	.8	1.2			
Hardwoods	11.0	1.8	.5		.8	.7
Cypress	8.5	9.5	11.5	18.4	8.2	6.7
Total	20.2	12.1	13.2	18.4	9.0	8.8

¹ Volumes in standard cords, including bark, including saw timber material.² Cypress included with hardwoods in pine-hardwood region.³ Does not include areas of reproduction nor of clear-cut forest conditions.⁴ Includes areas of reproduction and clear-cut forest conditions.⁵ Negligible.

TABLE 47.—Average net cordwood volume per acre by forest condition—Continued

PINE HARDWOOD REGION—1936

Type group, survey unit, and species group	Old growth		Second growth			All conditions
	Uncut	Partly cut	Sawlog size		Under sawlog size	
			Uncut	Partly cut		
Loblolly-shortleaf pines:						
Central:	Cords	Cords	Cords	Cords	Cords	Cords
Pines.....	30.3	13.4	16.9	9.6	3.5	10.1
Hardwoods.....	7.0	3.6	1.5	1.3	.2	1.1
Total.....	37.3	17.0	18.4	10.9	3.7	11.2
North-central:						
Pines.....	24.4	12.9	16.9	10.2	3.5	9.9
Hardwoods.....	5.3	3.3	2.1	1.3	.2	1.1
Total.....	29.7	16.2	19.0	11.5	3.7	11.0
North:						
Pines.....	14.0	10.9	13.9	10.8	4.0	10.0
Hardwoods.....	1.7	1.8	2.0	1.4	.2	1.3
Total.....	15.7	12.7	15.9	12.2	4.2	11.3
Loblolly-shortleaf pines-hardwoods:						
Central:						
Pines.....	14.5	7.9	7.9	5.5	1.6	4.2
Hardwoods.....	22.8	11.9	10.7	7.5	1.2	5.3
Total.....	37.3	19.8	18.6	13.0	2.8	9.5
North-central:						
Pines.....	15.2	9.4	7.6	5.2	1.6	3.7
Hardwoods.....	16.9	7.0	8.4	6.2	1.6	4.1
Total.....	32.1	16.4	16.0	11.4	3.2	7.8
North:						
Pines.....	8.7	6.4	6.3	4.6	1.9	3.8
Hardwoods.....	5.1	5.4	5.0	5.8	2.2	3.5
Total.....	13.8	11.8	11.3	10.4	4.1	7.3
Upland hardwoods:						
Central:						
Pines.....	1.7	1.1	1.0	1.0	.2	.6
Hardwoods.....	15.5	13.8	11.7	9.5	1.7	6.3
Total.....	17.2	14.9	12.7	10.5	1.9	6.9
North-central:						
Pines.....	1.2	1.0	1.3	.9	.3	.7
Hardwoods.....	15.6	11.9	13.1	9.8	2.9	7.8
Total.....	16.8	12.9	14.4	10.7	3.2	8.5
North:						
Pines.....	.6	.6	.4	.5	.3	.4
Hardwoods.....	10.2	9.1	7.8	7.0	4.9	6.9
Total.....	10.8	9.7	8.2	7.5	5.2	7.3
Bottom-land hardwoods:						
Central:						
Pines.....	.6	.3	.4	.4	.2	.4
Hardwoods.....	29.5	20.6	22.0	15.7	7.0	17.9
Total.....	30.1	20.9	22.4	16.1	7.2	18.3
North-central:						
Pines.....	.4	.5	.5	.8	.1	.3
Hardwoods.....	24.6	13.0	19.8	15.5	4.8	12.3
Total.....	25.0	13.5	20.3	16.3	4.9	12.6
North:						
Pines.....	3.8	1.0	.6	.9	.2	1.1
Hardwoods.....	16.0	15.0	15.3	7.3	6.3	11.8
Total.....	19.8	16.0	15.9	8.2	6.5	12.9

TABLE 48. *Net increment of saw-timber component and total sound tree growing stock*

Survey unit and forest condition ¹	Saw-timber component of growing stock ²				Growing stock of sound trees			
	Pine	Hardwood	Cypress	Total	Pine	Hardwood	Cypress	Total
	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>
Southeast, 1934:								
Old growth	42,900	63,900	3,400	24,400	177,800	207,000	7,700	392,500
Second growth:								
Sawlog size	171,400	62,300	4,900	238,600	304,000	103,500	12,700	420,200
Under sawlog size	116,400	6,400	2,200	124,700	479,100	31,000	7,700	517,800
All conditions	244,900	132,300	10,500	387,700	627,600	712,700	27,700	1,368,000
Southwest, 1934:								
Old growth	4,100	18,200	1,100	23,400	46,500	7,000	1,700	55,200
Second growth:								
Sawlog size	108,700	10,400	1,800	120,900	241,500	7,000	5,400	253,900
Under sawlog size	79,800	2,500	800	83,100	307,000	18,000	7,800	332,800
All conditions	192,600	31,100	3,700	227,400	548,500	25,000	13,200	586,700
Central, 1936:								
Old growth	13,700	59,800	1,600	75,100	29,000	29,000	2,000	60,000
Second growth:								
Sawlog size	558,200	136,500	800	695,500	1,310,400	712,000	7,000	2,029,400
Under sawlog size	275,500	25,500	(*)	301,000	1,118,600	272,300	—	1,390,900
All conditions	847,400	222,100	2,400	1,071,900	2,429,000	1,216,300	7,000	3,652,300
North Central, 1936:								
Old growth	3,800	13,700	—	17,500	10,700	52,500	—	63,200
Second growth:								
Sawlog size	249,500	61,700	—	311,200	645,600	280,600	—	926,200
Under sawlog size	112,100	11,800	—	123,900	526,700	135,800	—	662,500
All conditions	365,400	87,200	—	452,600	1,183,000	468,900	—	1,651,900
North, 1936:								
Old growth	1,100	8,100	(*)	9,200	7,500	40,500	(*)	48,000
Second growth:								
Sawlog size	161,500	31,600	(*)	193,100	382,000	164,800	(*)	546,800
Under sawlog size	62,300	14,000	(*)	76,300	273,300	137,000	(*)	410,300
All conditions	224,900	53,700	(*)	278,600	662,800	342,300	(*)	1,005,100

¹ "Under sawlog size" includes reproduction and clear-cut conditions.² International 1/4-inch rule.³ 5.0 inches d. b. h. or larger, with bark; includes saw timber.⁴ Negligible.

TABLE 49. *Average net board-foot, cord, and cubic-foot increment per acre, excluding the effect of cutting*

Survey unit and forest condition ¹	Board-foot volume ²				Cordwood volume outside bark				Cubic-foot volume inside bark			
	Pine	Hard-wood	Cy-press	Total	Pine	Hard-wood	Cy-press	Total	Pine	Hard-wood	Cy-press	Total
Southeast, 1934:	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Board feet</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>
Old growth.....	—37	58	4	25	—0.14	0.19	0.01	0.06	—10.5	12.2	0.6	2.3
Second growth:												
Sawlog size.....	73	26	2	101	.13	.16	.01	.30	9.2	10.5	.4	20.1
Under sawlog size.....	45	2	1	48	.19	.04	(3)	.23	13.0	2.5	.2	15.7
Weighted average.....	35	19	2	56	.09	.10	.01	.20	6.1	6.5	.3	12.9
Southwest, 1934:												
Old growth.....	10	38	2	50	— .01	.15	(3)	.14	— .8	9.7	.3	9.2
Second growth:												
Sawlog size.....	119	11	2	132	.26	.07	.01	.34	19.2	4.9	.4	24.5
Under sawlog size.....	70	2	1	73	.27	.03	(3)	.30	19.0	1.5	.4	20.9
Weighted average.....	66	11	1	78	.19	.06	(3)	.25	13.2	3.8	.3	17.3
Central, 1936:												
Old growth.....	31	133	4	168	.07	.50	.01	.58	5.4	34.0	.4	39.8
Second growth:												
Sawlog size.....	199	48	(3)	247	.47	.25	(3)	.72	35.6	16.5	(3)	52.1
Under sawlog size.....	144	13	(3)	157	.59	.14	(3)	.73	42.6	9.0	(3)	51.6
Weighted average.....	154	40	1	195	.45	.22	(3)	.67	33.3	14.4	.1	47.8
North central, 1936:												
Old growth.....	31	110		141	.09	.41		.50	6.8	27.7		34.5
Second growth:												
Sawlog size.....	207	51		258	.54	.23		.77	41.2	15.2		56.4
Under sawlog size.....	104	11		115	.50	.13		.63	36.4	8.2		44.6
Weighted average.....	146	35		181	.47	.19		.66	35.9	12.2		48.1
North, 1936:												
Old growth.....	4	24	(3)	28	.02	.12	(3)	.14	1.8	7.9	(3)	9.7
Second growth:												
Sawlog size.....	121	24	(3)	145	.29	.12	(3)	.41	22.1	8.0	(3)	30.1
Under sawlog size.....	59	14	(3)	73	.27	.13	(3)	.40	19.9	8.4	(3)	28.3
Weighted average.....	80	19	(3)	99	.24	.12	(3)	.36	18.1	7.9	(3)	26.0

¹ "Weighted average" includes reproduction and clear-cut conditions.² International 1/4-inch rule.³ Less than 0.5 board foot, 0.005 cord, or 0.05 cubic foot.TABLE 50.—*Sawmills in Georgia, by size class, 1937*¹

Survey unit	Mills having 10-hour daily capacity (M board feet) of—			Total
	1-19	20-39	40-79	
Southeast.....	222	17	2	241
Southwest.....	102	15	1	118
Central.....	516	11	6	533
North central.....	369	0	0	369
North.....	346	0	0	346
All units.....	1,555	43	9	1,607

¹ In 1937 there were no mills in Georgia having a daily capacity of 80 M board feet or more.

TABLE 51.—Primary forest industries: number of plants and employment in man-days of 10 hours, 1937

Industry or commodity	Southeast unit				Southwest unit			
	Plants	Employment			Plants	Employment		
		Woods	Plant	Total		Woods	Plant	Total
	Number	1,000 man-days	1,000 man-days	1,000 man-days	Number	1,000 man-days	1,000 man-days	1,000 man-days
Lumber	241	244	383	627	118	164	257	421
Cross ties		220		220		28		28
Poles and piles		15		15		2		2
Veneer	8	41	110	151	4	40	80	120
Cooperage	19	30	35	65	10	16	21	37
Pulpwood	2	96	238	334		53		53
Fuel wood		1,200		1,200		847		847
Fence posts		34		34		32		32
Miscellaneous manufactures	5	15	15	30	14	5	5	10
Treating plants	2		42	42				
Wood distillation	3	88	198	286				
Turpentine stills	478	3,408	212	3,620	121	902	56	958
Total	758	5,391	1,233	6,624	267	2,089	419	2,508
	Central unit				North-central unit			
	Plants	Employment			Plants	Employment		
		Woods	Plant	Total		Woods	Plant	Total
	Number	1,000 man-days	1,000 man-days	1,000 man-days	Number	1,000 man-days	1,000 man-days	1,000 man-days
Lumber	533	457	913	1,370	369	116	214	330
Cross ties		37		37		8		8
Poles and piles		15		15		6		6
Veneer	12	48	64	112		10		10
Cooperage					4	4	14	18
Pulpwood		38		38				
Fuel wood		1,210		1,210		1,422		1,422
Fence posts		64		64		50		50
Miscellaneous manufactures	21	26	20	46	17	14	18	32
Treating plants	2		9	9	2		18	18
Turpentine stills	4	46	2	48				
Total	572	1,941	1,008	2,949	392	1,630	264	1,894
	North unit				All units			
	Plants	Employment			Plants	Employment		
		Woods	Plant	Total		Woods	Plant	Total
	Number	1,000 man-days	1,000 man-days	1,000 man-days	Number	1,000 man-days	1,000 man-days	1,000 man-days
Lumber	346	101	163	264	1,607	1,082	1,930	3,012
Cross ties		23		23		316		316
Poles and piles		5		5		43		43
Veneer	1	11	2	13	25	150	256	406
Cooperage	3	10	12	22	36	60	82	142
Pulpwood		24		24	2	211	238	449
Fuel wood		377		377		5,056		5,056
Fence posts		18		18		198		198
Miscellaneous manufactures	6	4	2	6	63	64	60	124
Treating plants					6		69	69
Wood distillation					3	88	198	286
Turpentine stills					603	4,356	270	4,626
Total	356	573	179	752	2,345	11,624	3,103	14,727

TABLE 52.—Annual utilization drain from saw-timber component and total sound-tree growing stock by species groups for all forms of utilization, 1934–37¹

Survey unit and year	From sawtimber component ²				From sound trees 5.0 inches or larger ³			
	Pine	Hardwood	Cypress	Total	Pine	Hardwood	Cypress	Total
Southeast:	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>
1934.....	233,600	75,800	84,400	393,800	682,000	198,100	164,500	1,044,600
1935.....	250,000	84,200	82,600	416,800	751,800	205,200	162,300	1,119,300
1936.....	281,500	90,900	60,400	432,800	850,100	218,600	118,600	1,187,300
1937.....	307,800	94,300	59,300	461,400	930,200	235,100	123,200	1,288,500
Southwest:								
1934.....	181,800	49,600	19,700	251,100	517,200	115,800	39,500	672,500
1935.....	198,400	46,000	14,900	259,300	600,200	103,400	30,600	734,200
1936.....	212,900	49,900	11,400	274,200	643,700	110,700	23,600	778,000
1937.....	213,500	51,600	11,000	276,100	623,200	124,000	24,900	772,100
Central:								
1936.....	417,400	114,000	10,000	541,400	1,292,200	432,200	18,800	1,743,200
1937.....	416,000	120,000	10,000	546,000	1,257,500	434,700	19,800	1,712,000
North central:								
1936.....	195,600	47,600		243,200	822,100	304,700		1,126,800
1937.....	195,300	41,900		237,200	839,400	309,500		1,148,900
North:								
1936.....	100,900	42,400		143,300	281,000	183,400		464,400
1937.....	97,900	40,700		138,600	287,200	193,800		481,000
All units:								
1936.....	1,208,300	344,800	81,800	1,634,900	3,889,100	1,249,600	161,000	5,299,700
1937.....	1,230,500	348,500	80,300	1,659,300	3,937,500	1,297,100	167,900	5,402,500

¹ No estimates were possible for the central and northern units in 1934 and 1935.² Based on International 1/4-inch rule.³ Expressed in cords, including bark; saw timber included.

TABLE 53.—Utilization drain from saw-timber component and total sound-tree growing stock by species groups, 1937

Survey unit and form of utilization	From saw timber ¹				From all material ²			
	Pine	Hardwood	Cypress	Total	Pine	Hardwood	Cypress	Total
Southeast:	<i>Million board feet</i>	<i>Million board feet</i>	<i>Million board feet</i>	<i>Million board feet</i>	<i>Thousand cords</i>	<i>Thousand cords</i>	<i>Thousand cords</i>	<i>Thousand cords</i>
Lumber.....	149.5	42.0	9.9	201.4	377.6	78.6	18.9	475.1
Cross ties.....	52.2	9.6	45.5	107.3	137.9	19.6	94.9	252.4
Poles and piles.....	4.8		.2	5.0	17.2		.5	17.7
Veneer.....	4.7	18.8		23.5	11.6	34.8		46.4
Cooperage.....	15.0	.3		15.3	40.6	.6		41.2
Miscellaneous manufactures.....	.5	2.2	3.7	6.4	1.3	5.0	7.1	13.4
Pulpwood.....	16.8			16.8	99.3			99.3
Fuel wood.....	60.1	20.6		80.7	218.6	90.0		308.6
Fence posts.....					3.2	1.6	1.8	6.6
Domestic farm use.....	4.0	.4		4.4	20.9	1.8		22.7
Land clearing.....	.2	.4		.6	2.0	3.1		5.1
Total.....	307.8	94.3	59.3	461.4	930.2	235.1	123.2	1,288.5
Southwest:								
Lumber.....	111.5	21.0	2.0	134.5	286.0	42.5	4.2	332.7
Cross ties.....	5.2	.3	8.2	13.7	13.7	.6	17.0	31.3
Poles and piles.....			.8	.8	.6		2.0	2.6
Veneer.....	8.3	12.7		21.0	20.1	23.0		43.1
Cooperage.....	6.8	2.3		9.1	17.5	4.6		22.1
Miscellaneous manufactures.....	1.2	.4		1.6	3.0	1.1		4.1
Pulpwood.....	12.7			12.7	55.1			55.1
Fuel wood.....	64.2	14.2		78.4	204.7	45.9		250.6
Fence posts.....					2.4	1.6	1.7	5.7
Domestic farm use.....	3.4	.3		3.7	18.0	1.5		19.5
Land clearing.....	.2	.4		.6	2.1	3.2		5.3
Total.....	213.5	51.6	11.0	276.1	623.2	124.0	24.9	772.1

See footnotes at end of table.

TABLE 53.—Utilization drain from saw-timber component and total sound-tree growing stock by species groups, 1937- Continued

Survey unit and form of utilization	From saw timber ¹				From all material ²			
	Pine	Hardwood	Cypress	Total	Pine	Hardwood	Cypress	Total
	Million board feet	Million board feet	Million board feet	Million board feet	Thousand cords	Thousand cords	Thousand cords	Thousand cords
Central:								
Lumber.....	341.1	78.6	8.0	427.7	789.8	148.7	15.3	953.8
Cross ties.....	14.6	.6	2.0	17.2	34.3	1.4	4.2	39.9
Poles and piles.....	5.9			5.9	18.1			18.1
Veneer.....	1.9	31.5		33.4	4.2	58.6		62.8
Miscellaneous manufactures.....	1.8	3.9		5.7	6.1	8.7		14.8
Pulpwood.....	8.7			8.7	34.4			34.4
Fuel wood.....	30.3			30.3	313.4	174.7		488.1
Fence posts.....	.5	1.2		1.7	11.5	14.8	.3	26.6
Domestic farm use.....	5.6	.6		6.2	27.4	2.5		29.9
Land clearing.....	5.6	3.6		9.2	18.3	25.4		43.6
Total.....	416.0	120.0	10.0	546.0	1,257.5	444.7	19.8	1,712.0
North central:								
Lumber.....	98.0	12.3		110.3	232.1	23.7		255.8
Cross ties.....	.7	2.6		3.3	1.5	5.3		6.8
Poles and piles.....	2.9			2.9	7.3			7.3
Veneer.....		7.1		7.1		13.6		13.6
Cooperage.....	.1	2.0		2.1	1.3	4.3		5.6
Miscellaneous manufactures.....	3.2	.5		3.7	10.1	2.1		12.2
Fuel wood.....	80.7	14.9		95.6	532.1	210.1		742.2
Fence posts.....	.1	1.0		1.1	3.5	34.1		37.6
Domestic farm use.....	6.5	.6		7.1	32.0	2.9		34.9
Land clearing.....	3.1	.9		4.0	19.5	13.4		32.9
Total.....	195.3	41.9		237.2	839.4	309.5		1,148.9
North:								
Lumber.....	77.2	14.7		91.9	182.4	28.8		211.2
Cross ties.....	1.3	8.6		9.9	2.9	17.7		20.6
Poles and piles.....	1.7			1.7	5.6			5.6
Veneer.....	.5	7.3		7.8	1.0	14.3		15.3
Cooperage.....	3.3	3.0		6.3	7.4	5.6		13.0
Miscellaneous manufactures.....	.1	.3		.4	.2	2.5		2.7
Pulpwood.....	3.0	.4		3.4	15.4	9.5		24.9
Fuel wood.....	6.1	5.2		11.3	46.4	92.3		138.7
Fence posts.....		.1		.1	.1	8.0		8.1
Domestic farm use.....	2.9	.3		3.2	13.9	1.3		15.2
Land clearing.....	1.8	.8		2.6	11.9	13.8		25.7
Total.....	97.9	40.7		138.6	287.2	193.8		481.0
All units:								
Lumber.....	777.3	168.6	19.9	965.8	1,867.9	322.3	38.4	2,228.6
Cross ties.....	74.0	21.7	55.7	151.4	190.3	44.6	116.1	351.0
Poles and piles.....	15.3		1.0	16.3	48.8		2.5	51.3
Veneer.....	15.4	77.4		92.8	36.9	144.3		181.2
Cooperage.....	25.2	7.6		32.8	66.8	15.1		81.9
Miscellaneous manufactures.....	6.8	7.3	3.7	17.8	20.7	19.4	7.1	47.2
Pulpwood.....	41.2	.4		41.6	204.2	9.5		213.7
Fuel wood.....	241.4	54.9		296.3	1,315.2	613.0		1,928.2
Fence posts.....	.6	2.3		2.9	20.7	60.1	3.8	84.6
Domestic farm use.....	22.4	2.2		24.6	112.2	10.1		122.2
Land clearing.....	10.9	6.1		17.0	53.8	58.8		112.6
Total.....	1,230.5	348.5	80.3	1,659.3	3,937.5	1,297.1	167.9	5,402.5

¹ Expressed in International 1/4-inch rule.² Expressed in cords, including bark; saw timber included.

[Thousand cords i. e., (000) omitted].

* Material 5.0 inches in diameter, including bark, and larger expressed in standard cords, saw timber, include 1934 and 1935.

TABLE 56.—Change in saw-timber and total growing stock from time of survey to Jan. 1, 1938

Survey unit and date and species group	Saw-timber component ¹				Sound trees 5.0 inches or larger, including saw timber ¹			
	Jan. 1, year of survey	Net change	Jan. 1, 1938	Percent of initial inventory	Jan. 1, year of survey	Net change	Jan. 1, 1938	Percent of initial inventory
Southeast (1934):	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>M board feet</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>	<i>Cords</i>
Pine.....	8,593,000	-26,300	8,566,700	99.7	38,178,200	-405,800	37,772,400	98.9
Hardwood.....	3,996,100	+188,000	4,184,100	104.7	24,076,400	+1,937,100	26,013,500	108.0
Cypress.....	850,900	-244,500	606,400	71.3	3,484,200	-478,500	3,005,700	86.3
Total.....	13,440,000	-82,800	13,357,200	99.4	65,738,800	+1,052,800	66,791,600	101.6
Southwest (1934):								
Pine.....	4,032,500	-20,500	4,012,000	99.5	16,598,500	-125,500	16,473,000	99.2
Hardwood.....	914,800	-73,800	841,000	91.9	5,372,800	+207,400	5,580,200	103.9
Cypress.....	182,300	-42,400	139,900	76.7	791,600	-70,500	721,100	91.1
Total.....	5,129,600	-136,700	4,992,900	97.3	22,762,900	+11,400	22,774,300	100.1
Central (1936):								
Pine.....	11,036,400	+892,700	11,929,100	108.1	37,182,200	+2,461,600	39,643,800	106.6
Hardwood.....	4,421,000	+212,600	4,633,600	104.8	24,802,300	+1,542,500	26,344,800	106.2
Cypress.....	94,500	-15,200	79,300	83.9	339,700	-23,500	316,200	93.1
Total.....	15,551,900	+1,090,100	16,642,000	107.0	62,324,200	+3,980,600	66,304,800	106.4
North central (1936):								
Pine.....	4,821,700	+351,100	5,172,800	107.3	17,055,200	+774,700	17,829,900	104.5
Hardwood ²	1,354,200	+86,800	1,441,000	106.4	8,634,900	+317,200	8,952,100	103.7
Total.....	6,175,900	+437,900	6,613,800	107.1	25,690,100	+1,091,900	26,782,000	104.3
North (1936):								
Pine.....	3,836,700	+256,400	4,093,100	106.7	13,944,900	+800,400	14,745,300	105.7
Hardwood ²	1,714,600	+24,600	1,739,200	101.4	11,695,300	+289,600	11,984,900	102.5
Total.....	5,551,300	+281,000	5,832,300	105.1	25,640,200	+1,090,000	26,730,200	104.3
All units:								
Pine.....	32,320,300	+1,453,400	33,773,700	104.5	122,959,000	+3,505,400	126,464,400	102.9
Hardwood ²	12,400,700	+438,200	12,838,900	103.5	74,581,700	+4,293,800	78,875,500	105.8
Cypress.....	1,127,700	-302,100	825,600	73.2	4,615,500	-572,500	4,043,000	87.6
Total.....	45,848,700	+1,589,500	47,438,200	103.5	202,156,200	+7,226,700	209,382,900	103.6

¹ Board-foot volume in International $\frac{1}{4}$ -inch rule. Includes 49,900 M board feet in the butts of newly turpented trees in south Georgia not shown in table 12, 13, 39, 40, and 41.

² Cordwood volume includes bark. Does not include 20,800 cords in upper stems and limbs of sawlog-size special-use species included in previous cordwood inventory tables.

³ Includes small amount of cypress.

34°



33°

32°

31°



AREAS CHARACTERIZED BY
MAJOR FOREST TYPES
STATE OF GEORGIA

1941



FOREST TYPES

- LONGLEAF
- LONGLEAF - SLASH
- LONGLEAF - SLASH - CYPRESS
- SHORTLEAF - HARDWOODS
- SHORTLEAF - LOBLOLLY - HARDWOODS
- LOBLOLLY - HARDWOODS
- MIXED UPLANDS HARDWOODS
- MIXED BOTTOM - LAND HARDWOODS
- CYPRESS - HARDWOODS
- MARSH, COASTAL ISLANDS

Type symbols indicate areas where the given type predominates, but the frequent local occurrence of other types is not precluded.

